

REPORT
OF
THE EIGHTH
INDIAN INDUSTRIAL
CONFERENCE
HELD AT BANKIPORE
ON THE

30th December 1912

PUBLISHED BY THE GENERAL SECRETARY
THE INDIAN INDUSTRIAL CONFERENCE, AMRAOTI
1913

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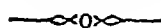
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POONA THE ARIABHUSHAN PRESS, BUDHWAR PETH,

Printed at the "Aryabhushan Press" Poona, by Natesh Appaji Dravid and published by R. N. Mudholkar, General Secretary Indian Industrial Conference at Amraoti

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INTRODUCTION.

'A careful examination of all the factors, that help production, cheapen distribution, avoid waste of commodities and energy (both human and physical) and reduce the drain, is needed. A thorough study of conditions, political, local, religious, educational and moral has to be made so as to effect the economic elevation of the country' (*Presidential address of Lala Harkishen Lal*, p XVI)

'Never was there an age full of great social problems as ours, surely they are not unworthy of the best efforts of the best minds among us. Think of the force that University men might bring to bear by their personal influence, if great numbers of them had learnt to think clearly and had studied the age in which they live. They might then take a wise, an active part in relieving misery without making pauperism, in helping the people to educate themselves and rise to a higher level, to become not only more efficient producers but also wiser consumers, with greater knowledge and greater love of all that is beautiful' (*Ibid*, P IXV)

'At almost every point, it is true, the hand that does the material work is the hand of an Indian. But—be the reason what it may—at most points still the head that has organised and the voice that has taught, have been those of the European. It will not always be so, but it still is true. And there is no lesson that I have learned more clearly by my examination of the industries and trades of India than this. If we are to do justice to the country we must work together, European and Indian, at the tasks we respectively do best. Jealousy or exclusiveness by one or other at this stage of our country's development must have consequences as ruinous as estrangement between old and tried partners who know each other's worth' (*Frederick Nael Paton Esq*, p 196.)

In conformity with the annual practice, the Eighth Session of the Indian Industrial Conference was held at Bankipore on Monday the 30th December 1912, in the Congress Pandal. The attendance consisted of notable representatives and leaders of different Provinces as well as sympathisers with the aims and objects of the Conference movement. The Conference was also fortunate in securing as its President Lala Harkishen Lal, B. A., Bar-at-Law, of Lahore, whose election to this honour was amply justified by his masterly address, which for its breadth of view and exhaustive treatment of the present economical position of India, was highly appreciated by his countrymen. The address will be reckoned as a valuable contribution to the Conference literature and can be ranked

with some of the best utterances from the Conference platform. It may be in the recollection of our readers that Lala Harkishen Lal was the Chairman of the Reception Committee, of the 5th Indian Industrial Conference, which met at Lahore in December 1909. The address of Lala Harkishen Lal which covers about 55 pages of small type partakes more of the nature of a treatise on the general economic position of the country than a Presidential utterance. It is therefore, not possible to do justice to its varied contents, within the circumscribed limits of an introduction. At the very out-set, Mr. Harkishen Lal proves with the aid of statistics that the state of the multitude of men, women and children in the country is "a little below the most meagre comfort and a little above the nearest road to starvation" as observed by a recent visitor from the British Isles. In India, large savings of capital are not possible, unless Agriculture is carried on with the aid of more improved methods and on a more extensive scale and labour was drifted partially from Agricultural to Industrial pursuits. Other sources of income like the forests, mining, the fishery and commerce deserve also, to be systematically exploited and sedulously pursued.

In the opinion of Mr. Harkishan Lal, the following factors are essential for the improvement of Indian Agriculture in addition to copious water supply by artificial means :—

- (a) Leaders should equip themselves with practical knowledge of modern up-to-date methods in Agriculture. This can better be accomplished by the establishment of Agricultural chairs in connection with the Indian Universities.
- (b) Spirit of emulation among farmers by organising fairs, of Agricultural produce, village arts and industry, cattle shows and other means.
- (c) Co-operation in cultivation, harvesting, marketing as well as in credit.
- (d) Attempt to export manufactured products instead of raw materials. For instance, flour and not

wheat, oil and not oil-seeds, ginned cotton, dried fruits and preserved vegetables.

(e) Use of approved manures.

(f) Provision for the supply of forage and other food stuffs for the cattle.

In regard to handi-crafts Mr. Harkishen Lal thinks that the care of Government and of the patriots is required not only for the mill hands but also for the other large multitudes that still subsist by handi-crafts, which are at present learnt in the majority of cases under circumstances not favourable to improvement. It is the bounden duty both of the state and the people to try their best to preserve the decaying industries of the country from death and with the aid of better tools and better organization for marketing to renew the lease of their life.

The president next passes on to the consideration of the Jute Mills, and points out that out of the 38 Mills not a single one is managed or financed by any Indian. "Here is," says he, "food for reflection for all, who are anxious to advance the cause of Indian Industries."

The Cotton Mill Industry being the largest with prospects of further growth and expansion has naturally received a fuller treatment at Mr. Harkishen Lal's hands. "So long" says Mr. Harkishen Lal, "as the freights on fine American Cotton remain against us, *prima facie* for finer goods, India must always depend on foreign countries. To remedy this state of things, cultivation of finer stapled cotton or the invention of the machinery to produce finer yarn from the present quality of cotton are the subjects which deserve the earnest attention of leaders in the country apart from the question of protection." Any success in the improvement of quality of cotton will benefit not only the Weaving Factories but also the hand-loom industry which has now to depend so largely on foreign yarn. England's supremacy in point of excellence of her cotton fabrics is due to several causes which may be summarised thus :—

- (1) Combinations to grow cotton for mills.
- (2) Technical Institutes and laboratories to improve the knowledge and the skill of the workman.
- (3) The Primary cost of machinery, and appliances, sundries and accessories is much less in England than in India.
- (4) The labour is more efficient.
- (5) Power of Lancashire Mill-owners to influence the Government to suit their own requirements.
- (6) Establishment of separate associations for watching the interest of various matters connected with this industry.

After the models of the English institutions, Mr. Harkishan Lal suggests the formation of an association with headquarters at Delhi, the membership of which should be open to all the mills in India. In addition to this, there should be associations of people for growing, buying and selling cotton and also one or more Institutes of Mechanical Engineers, Carding and Spinning Masters. There should be also Banks specially organised for financing cotton trade and manufacture.

From cotton he proceeds to the consideration of smaller industries : Paper making, brewing and weaving of wollen cloths are at present mainly in the hands of European capitalists. Whereas Flour Milling, Oil crushing, Cotton ginning, Glass-making and a few other industries are in the hands of Indian capitalists. Indifferent success in some of these Indian ventures is due to various causes which it is the duty of every enlightened Indian to investigate and to communicate the result to the office of the Industrial Conference which has also taken upon itself the investigation of this important question ; want of sufficient capital, employment of inefficient and inexperienced staff, absence of business knowledge, want of honesty are the main causes which have contributed to the failure of so many concerns.

The conditions which have favoured the growth of industrialism in foreign countries have been stated by Mr. Harkishan Lal thus :—

- 1 Discoveries of Science, which were always utilised in practice
- 2 Application of machinery, which was invented, made and used as needs arose
3. Utilisation of coal and water or other powers of nature, to reduce the cost of production by reducing the labour bill
- 4 Factory system , Associated efforts
- 5 Easy and cheap transport, by land and water
- 6 Commercial and Industrial enterprise throughout the peoples of the country
- 7 Division of labour, which helped specialisation
- 8 Cheap and sufficient capital
- 9 Favourable and helpful attitude of governments, at home and in international relations
- 10 Adaptable social and religious systems, to help in the readjustment of new factors
11. Co-operation of women folk, who in the East act, sometime, as a brake on the wheel
12. Competition and avoidance of competition as required by the dictates of prudence and wisdom
- 13 Combinations
14. Utilisation of By-products
- 15 World Markets
- 16 Literary assistance
17. System of Insurance against the risks of fire, water and earthquakes
- 18 Simultaneous growth in all directions, and
- 19 Latterly Technical Education

Capital, skill, labour, market and fiscal autonomy, the requisites of production have been next dealt with.

For the accumulation of capital we must save, invest and organise, and in order to induce foreign capital to flow into purely Indian or mixed concerns, the best way would be to introduce large and well considered schemes with mixed Boards ; schemes which are aided by Government or aided by Native States or local bodies will naturally have a better chance.

It behoves us also to establish a sound and solid system of banking, and a banking association for the discussion of questions vital to the existence, continuance and prosperity

of the banks. A very useful Banking system could be devised with the aid of Native States somewhat on the lines of Presidency and Discount Banks combined. For the healthy development of Insurance business which is an indirect method of collecting capital, the President recommends the formation of an association covering all departments of risks. Says he :—

“ The country is vast, the population is large, the ills and risks to which it is subject are more numerous than anywhere else, therefore it stands in greater need of real protection by insurance, than the population of any other country, Afford real protection to all, and indirectly bring together small sums of money to swell into much This will form a rich source for collecting capital ”

Another way of collecting capital is the spread of Village Urban Banks through the Co-operative Societies

The President suggests that Government should start *Pioneer* Factories for the production of such articles as are largely used by its departments and after a while these concerns should be handed over to the people on payment of a portion of the money in hard cash and the balance by way of deferred-payment debentures This, according to him, will be a better way of introducing new industries into the country. Mr. Harkishen Lal acknowledges that “Swadeshism or the love of the country on its material or prosperity side is a noble and effective force”; and can be translated into direct money contributions to form a nucleus of capital for initiating new industries, introducing young men into business careers as opposed to mere literary professions With regard to skill the President has the following observations to make.—

“It is technically termed *skill*, but includes a multitude of requirement In this connection our attention should not be focussed on mere steam power factories, but on all factories, big or small, hand-worked or power-worked, which are engaged in the processes of manufacturing useful articles of food, apparel, habitation, enjoyment, transport, and intellectual and physical advancement We find, by comparison, that both *hand* and *power* productions of India are much inferior to those of Europe, America and Japan in the following respects They are poorer in design, execution, and finish, and therefore they fetch less value, and are much less appreciated, and they are hardly able to hold a place before similar articles of foreign manufacture, let the better and older organisation and the world-marketing be accepted as factors against us, but still there is no reason why India should not be enabled by training, to

manufacture some of the articles at least, for which she has her own raw materials, for which immediate need for deep scientific knowledge does not exist, and for which she can, even with her scanty resources, find the required amount of capital, and lastly, which her own sons, if better trained, could manufacture."

Mr Harkishenlal has very ably discussed the question of the duties and the responsibility of a Government for ensuring the prosperity of its subjects. He argues that "the conception of the functions of the state in these days is quite different from what it was in ancient times". In modern times subject races have been admitted by all great powers to a share in the administration of their own affairs. Again the State Revenue does not consist merely of taxes raised but includes profits of large monopolies like the Railways and Irrigation schemes in India. The Indian Government is, therefore, responsible not only for internal peace but also for the prosperity of millions of her subjects. While discussing this point, he tries to answer the question as to the extent or limit to which prosperity be vouchsafed by each Government. A reasonable answer to this question of course is that the standard of prosperity of the people of India should not be lower than that of the citizens of any other country. This is the solution of the whole problem in a nutshell and it is to be seen how far the Government of India is prepared to accept this view.

For the promotion of Technical Education in the country, Mr Harkishen Lal proposes that after the models of Directors of Public Instruction, Assistant Directors of Public Technical or handi-craft Education should be appointed for each Province whose duty it should be to do every thing required for the establishment of such schools and for their further growth to suit the changing needs, habits and ideals of the people.

While commenting on the Report submitted by Lt. Col. Atkinson and Mr. Dawson on the prospects of technically trained students in India, Mr. Harkishen Lal expresses his opinion that the scope of the inquiry was very limited and the recommendations of the Committee "as far as Indians are concerned are not whole-hearted and positively disheartening".

The President next urges on the educated people the need of developing the foreign commerce of the country. He believes, that commerce is easier than manufactures in the face of competition and jealousy of the trade, the difficulty of languages the social habits of the people, vested rights and special privileges of certain firms and business concerns, as apart from England, several other countries are evincing a keen desire to push forward their oriental commerce. In the opinion of Mr. Harkishen Lal.

"The advantages of adopting a life of commerce would be many, as in addition to pecuniary advantages, to which all economic life aims, we will be able to buy in the cheapest market, and to sell in the dearest, we will learn what other people want from our resources, natural and manufactured, and we may tap, to our advantage, resources and sources hitherto unknown to us. We will also have opportunities to gain experience in methods of business, of large organizations of advanced countries, which experience, unfortunately, cannot be made available for a sit-at-home Indian or even to a traveller. We may friends abroad, to help us with capital, knowledge, and materials. This may lead to partnerships and associations beneficial to both the parties."

Mr. Harkishen Lal bitterly complains of the system or rather want of system in handling traffic by the Indian Railways and urges that it should be entirely changed and citing in support curious anomalies of existing Rates, and the delays that are caused to trade by shortness of waggons, preferential treatment and want of time limit. To remedy these evils he advocates the formation of a traffic board consisting of Indian and European members.

In concluding his address, the President has made some 15 suggestions which will be found to reproduce under "Summary of proposals" which follow this introduction.

The usual presentation of the annual Report on the work of the Industrial Conference Office by the General Secretary was followed by discussion of the various Resolutions which were submitted to the Conference, full details of which will be found in the proceedings.

The number of papers received this year was nearly the same as that of last year. Before taking as usual a general survey of these contributions, by official and non-official gentle-

men, some of whom attended the conference for reading their own papers, a word of apology is needed for the promiscuous way in which they are printed in this Volume. It is the yearly experience that papers come in up to the last moment and have to be sent to the Printers as they come to save delay, in the order of the dates of their receipt, hence it is not possible either to classify them according to their subject matter or in the order of the position of their writers. In this introduction, however, an attempt has been made to treat the different papers, under their respective groups due prominence being given to the contributions from Government officials according to the position of the writers. To facilitate reference the page of each paper is quoted.

In the list of papers, the place of honour may appropriately be given to "Work-a-day India" contributed by Mr. Frederick Noel Paton, Director General of Commercial Intelligence, India, in which the author graphically describes a few impressions of the work-a-day India gathered by him during his visits to most parts of the country when he had opportunities of seeing trades and industries in operation and talking with most of the leading men conducting them. This essay presents a kaleidoscopic view of the industrial and commercial activities of the whole country and the degree of organisation which is perceptible all round and doubts "whether the day has not gone past for speaking of India as if it were still a material". The organisation is not realised by persons abroad who are disposed to gauge Indian organisation by Western tests and conclude that any system which is different from theirs must of necessity be inferior in efficiency, and this opinion of foreigners leads Indians without foreign experience to look upon their own efforts to be inefficient being less uniform. To remove this erroneous impression and infuse more hope is the main object of this paper. To quote Mr. Noel Paton —

"Go where you will, you find the rising stream of skill and welfare creeping across the country, and it is our task to lead it in the right directions as an irrigation officer conducts his fertilizing flood

But please understand that my intention to-day is not to instruct. My purpose is one that would be much better performed by a cinematograph

want to call up before you a set of pictures of a few characteristic industries and trades in India and to leave you, if possible, with a greater pride in our country than before, and a deeper respect for that co-operation of East and West by which we have advanced so far and without which we should go no further. Nothing could testify more strongly to the desirability of a partnership between the resourcefulness of the Britisher and the adaptability of the Indian than the accomplished evolution of commercial and industrial methods possessing all the flexibility required in a country like this " (p 185)

Calcutta "with its teeming river, its jute, coal and tea", Bombay with its "enterprise and self confidence and its magnificent harbour," Madras "with its growing port accommodation its multifarious industries," Karachi with an oasis of sunbaked brick and superb bumpitiousness," Rangoon "with its golden pagoda gleaming through the smoke of a hundred Rice Mills and Steamers," Cawnpore versatile in enterprise, Delhi, "the Indian prototype of Rome" have all come under the keen observation of Mr Noel Paton, who has confessed to his inability to give even the vaguest impression of the magnitude of India's economic phenomena or of the skill, patience and enterprise that are visible even in the remotest corner of the Indian continent.

While on this subject, the writer admits that in some places the complex and obscure nature of the weights and measures puts too much power into the hands of the broker to the disadvantage of the producer and records his experience that the merchants themselves had raised this question in their conversation with him—a sure sign that the movement for the unification of weights and measures is gathering strength not out of any "theoretical predilection" but from the realisation of actual inconvenience and waste involved.

As agriculture has remained and will probably remain till end of time the main industry even in countries noted for their manufacturing activity, it naturally arrests our attention and agriculture and its allied industries deserve to be given a prominent place among the subjects contributed to the Conference.

The only paper directly dealing with agriculture has been contributed this year by Mr. V. G. Kogekar, organiser, the Deccan Agricultural Association, Poona (Page 206) "The utility"

says Mr. Kogekar, "of properly worked Agricultural Associations is no longer a subject of dispute" There is thus a necessity of an organization, which will serve as a link between Government Agricultural Departments on the one side and the cultivating classes on the other, it being essential that individual members of these Associations should work with some zeal. In the Marathi speaking tracts of the Bombay Presidency there are according to this writer 29 Agricultural Associations, of which 17 are located in 5 Districts of the Central Division, *viz* Poona, Satara Sholapur, Nasik and Ahmednagar. It appears that the majority of these Associations are doing yeomen service by introducing among the farmers some very useful and practical improvements, *e g.* (1) the proper method of preservation of cattle manure, (2) selection of seed, (3) use of insecticides against diseases of crops, (4) cultivation of new and profitable varieties of groundnuts, cotton, wheat and other crops, (5) experiments in green manuring with san for paddy.

Intimately Associated with agricultural improvements is the work of Co-operative Societies, which are increasing with rapid strides since the passing of the Co-operative Credit Societies' Act of 1904. The paper of Mr Mohi-Uddin-Ahmed, of Behar, throws much light on this subject (P. 421). Mr. Ahmed defines a Co-operative Society as an Association or Combination of persons having mutual regard for and knowledge of one another, who jointly pledge their credit in order to raise sufficient fund on cheaper terms for the purpose of lending out amongst themselves than each could obtain by pledging his individual credit. The author then proceeds to give instructions as to how to form these Societies, describes privileges they enjoy, their duties after registration, methods of conducting the business and the difference between borrowing from these Societies and from a Marwari or Mahajan and the benefits moral and economical which they confer on their members.

We now proceed to the two papers received this year on cotton industry. The first is by Mr. H. R. Pitke, Prices Current Inspector on cotton manufactures in Berar (P. 321). Mr. Pitke describes the three principal varieties of cotton in C. P.

and Berar, with the spinning capacity of each. Some of the varieties ripen in five months, whereas there are others which take nearly 8 months. The writer has tried to demonstrate with the aid of figures the rapid growth of cotton cultivation in these Provinces as contrasted with Bombay, the castes engaged in the weaving industry the kinds of articles they manufacture at some of the important centres with the aid of improved as well as old fashioned hand looms, and also the work done by the three spinning and weaving mills and suggests some remedies for the removal of the depression of the cotton manufacturing industry in these Provinces.

The second paper is by Babu Mukhtar Singh, Pleader of Meerat, on 'Cotton growing in India' (P 390) Mr. Mukhtar Singh makes therein some very useful suggestions for sowing of cotton seed after pointing out the present defects not only in the method of growing cotton, but also in its picking ginning and other processes. The paper deserves to be carefully read by those engaged in this industry.

Sugar manufacture occupies an important place after cotton industry and has been ably dealt with by Mr. G. N. Sahasrabudhe, the Sugar Expert of Poona, (Vide page 271) who was specially deputed by the Bombay Government to investigate this subject. After giving a historical sketch of the Indian industry with causes of its decline, he passes in review the conditions obtaining in Java, Mauritius and nine other countries. He also examines the four systems of Sugar and Gul making now in vogue in the different parts of our country and points out the points the defects of each.

From the foregoing we have seen that, provided there is sufficient sugarcane supply at a reasonable rate available for a modern type Sugar factory there is no difficulty in producing in India at a sufficiently low cost to compete with any foreign sugar. But a modern type sugar factory is not an easy affair to organise. The economical size of modern type sugar factory requires 300 to 1500 tons of cane per day. To start a medium size factory of say 600 tons of cane per day we require at least 50,000 tons of cane in a season. In a Province like the United Provinces where the outturn of cane per acre is necessarily very low (on account of climatic and other conditions) this much cane represents all area of about 3,300 acres. In order to avoid excessive transport charges this

much area must be within 35 square miles so that the mean distance of transport will not much exceed 5 miles. This thing is only possible on big irrigation canals as are to be found in the United Provinces (p. 292)

From the foregoing it will be seen that prospect of sugar industry in India are very hopeful provided we work earnestly on modern lines. But modern type sugar factories cannot be started in a day. It will probably be several years before we have a decent number of modern type factories. The demand for sugar in India is increasing every year by about 5,000 tons. Therefore for a good many years to come we shall have to import sugar from outside to the extent of more than half a million tons per year. Now the question is why should we import all the sugar in a refined form. Why should we not import raw sugar and refine it here as most other countries do? Anyhow we shall have to import sugar from outside for several years to come. But if we import this sugar in raw state and refine it here we shall derive at least some profit. Such a procedure will enable us to work at least 50 refineries which will be placed on the sea coast provinces like Bombay, Madras and Bengal (p. 295)

The next paper in this group is written by Babu Mukhtar Singh of Meerut on "Sugar Cultivation" (p. 250). In his last year's paper he dealt with different aspects of the subjects whereas in this year's paper he has restricted himself to a few practical suggestions which can be easily adopted by the agriculturists. After describing the structure of the sugarcane plant, in general, he proceeds to enumerate the specific varieties from which cuttings should be obtained. Preparation of the field for the Cane crop and the sowing of the canes and manuring. Irrigation and living the breeding of canes are next dealt within detail together with the treatment of diseases of Cane crops.

We next pass on to the Paper of Mr. M. N. De on "Silk in India". Silk like lac and other commercial products is not strictly an agricultural industry but occupies a place midway between agriculture on the one hand and manufacturing industries or processes on the other hand. After tracing the antiquity of this industry which has its origin in China, the writer points out that it was probably introduced in India at a later period has been alluded to in the Vedic as well as Puranic writings. Coming down to a later period 38 kinds of Silken stuffs are, according to this writer, mentioned in the Ain-i-Akbari. Bengal was a great centre of this industry for a long

time and is still noted for its different varieties of Silk. Assam is the home of Eri and Mooga Silk, whereas Behar is the distributing centre of Tussar. Factories Mirzapur in the United Provinces is also a Tussar weaving centre. The Silk Industry in Madras Presidency Central India is gradually declining and that in Kashmir is in a flowing condition and promises a rapid expansion. Mr. De concludes his essay with these practical suggestions.

Some practical suggestions are now being made —

1. Distribution of disease-free eggs to the rearers, only licensed rearers should be allowed to sell eggs after microscopical examination. The Government must have examination offices in all the big centres of rearing where the Government officers should examine eggs free of charge or they may go from house to house examining the eggs.

2. Encouraging the rearers to rear one-brooded race in October and February and Mysore or some well-established many-brooded hybrid races in other seasons. In order to induce the rearers the eggs must be distributed free at first.

3. In a new locality where there is no sericulture castor silkworm eggs should be first introduced as this race is more hardy.

4. The appointment of circuit lecturers who have expert knowledge of sericulture for advising the people.

5. The holding of competitive sericultural exhibitions important centres.

6. The sanction of subsidies for sericultural classes in village schools, mulberry trees, cocoons, reeled thread, etc.

7. Free distribution of pamphlets in the vernacular of the district for the guidance of rearers.

8. The starting of Silk Associations whose object should be — (a) to safeguard the interests of silk manufacturers, (b) to reply to queries regarding silk industry in general, (c) to send members to various exhibitions, (d) to bring together spinners, weavers and traders, (e) to collect and disseminate useful information and statistics regarding silk, (f) to promote technical and commercial knowledge by starting schools for rearing, weaving and dyeing in important silk centres like Bhagalpore, Berhampore, Benares, Ahmedabad, Malda, Gurudaspur, Nagpur, Madras, Bangalore, etc., (g) to induce the manufacturers and retail traders to demonstrate to the people who are carried away by gaudy colours that Indian silk goods have got their own good points specially from the point of view of price and durability, (h) to secure just and equitable relations between the silk merchants and the rearers, (i) to expand the growth of industrial art, (j) to establish Libraries and museums on sericulture in silkcentres, (k) to induce Government to take up sericulture in Khas Mahals.

and Court Wards estates thus setting examples to others, (1) to impress on manufacturers the advantages of Indian as compared with other silks and to be particular about the quality of the silk exported until a silk conditioning house is established in Calcutta or Bombay by the Government, which would stop the exportation of bad silk, (m) to establish co-operative societies and guilds among silk-growers and manufacturers

9. The establishment of a central sericultural institute with branches in all the important places of silk rearing

We now proceed to the paper of Mr W S Hadaway on "the possibilities of revival of the hand printed and painted cottons of Southern Indian" The paper reveals an intimate knowledge on the part of Mr. Hadaway of the subject treated by him The author regrets the decadence of this art and also that his own efforts "so well begun were allowed to fall into disuse owing probably to the mistaken attitude of some of the leading people towards the actual workmen He has suggested a workable scheme which will revive this industry with even a very limited amount of capital, the market being ready. In Europe also this industry still holds its own in the face of fierce competition with machinery.

There are two papers connected more or less with the formation of Joint Stock concerns The first is on "Banking in India" by Mr. C. Gopal Menon of Madras. "A country", says Mr Menon, 'derives from a wide-spread system of banking, facilities for the collection and distribution of capital according to the requirements of different localities' This is a very important service rendered by the Banking Companies to the economic development of their own country. Enormous commercial and industrial enterprises have become possible in America and Europe only on the strength of their banks. The best known method of exploiting capital is by the extension of the Joint Stock Banking systems, which is the only suitable system for the concentration and distribution of capital. After reviewing the various banking systems which were in vogue in the country before the establishment of the several chartered or Presidency banks, the author has given an idea of the methods of work of the Native Bankers, the English Exchange bank

and the Indian Joint Stock Banks and other much valuable information about Banking systems and their importance in the economical development of a country.

Along with Mr. Menon's paper may be read with benefit the contribution of Mr H R Crosthwaite on " Unmitl-
ed Liability as a national asset ' (P 197) " India " says
Mr Crosthwaite " is a country of small units, a vast rural
area of small villages, small holdings, small dealings, small
incomes " These units however, when put together make up a
large aggregate The commercial position of India, which
absorbs without effort one fifth of the whole world's output of
gold is a factor to be counted with The aim of social reform
should be to elevate the moral character and improve the
skilled capacity of a people According to this writer, the state
must be moulded by its citizens and not the citizen by the state
as is held by some confused thinkers This being the principle
on which the co-operative movement in India is based, it has
naturally achieved so much success within such a short time.
With these prefatory remarks the writer proceeds to describe
the part played by the unlimited liability system as applied to
the Co operative Credit movement and in conclusion exhorts the
people to adopt Co-operation, if they wish to keep their place in
the race for commerce.

" Law of Trade-marks in British India " is the theme
selected by Mr S Krishnamachariar for his paper. (P. 298) After
defining " Trade-mark " and " Property mark " he has brought
into prominence the fact there is no proper system of registration
of a Trade-mark in India and no provision for a statutory title
to it-a defect which interferes with the acquisition of an exclusive
right to the manufacture of any particular goods or articles and
it thus discourages any new inventions or enterprise. The
author has cited several cases in support of his contention and
has treated the subject in all its legal aspects, which owing to
their technical character would be rather perplexing to a
layman.

In the next paper, Dr N. Kunjan Pillai, Director of
Agriculture, Travancore, gives a very connected account of the

“Development of Industries” in that state (P. 1). It appears that although very little was done by the state up till now for the industrial advancement, still there are unmistakable indications that the state authorities are awakening to their responsibility in this matter. Weaving, Lace and Hosiery making, oil pressing, Coir making, sugar refining are the chief industries. Travancore is the home of the Coconut and there is a large of export trade of this product in its numerous forms. The paper is full of practical suggestions both to the people and the Government of the state for exploiting its natural resources.

Professor P. G. Shah of Lahore, who has already won two or three prizes from the Bombay University for his essays on economical subjects, placed this year at the disposal of the Conference his monograph (P. 19) on “Copper and Brass Industries of India.” It is a very carefully prepared essay revealing an amount of industry and perseverance on the part of its writer, whose efforts ought to stimulate other writers in the country, to follow his example. The paper traces the origin of the copper and brass vessels in India and the use of other metals, like, bronze tin, and tin alloys, describes how the religious notions both of Hindus and Mahomedans affected these industries, mentions the castes employed in this business in the different parts of India and the general tendencies of its organisation and methods of manufacture. These and various other questions too numerous to be noticed in detail in this place, have been fully discussed by Mr. Shah in his paper, which is a store-house of information on the subject, and is replete with suggestions for its improvement.

In his Paper on “Co-operative Village Libraries” (P. 77) Prof. J. N. Samaddar who writes almost every year for the Conference, puts in a plea for the establishment of libraries for benefit of the people of villages on Co-operative basis, which ought to aim not only at the production of wealth but what is more important still—the social and intellectual welfare and also to broaden the mental horizon of the masses. To secure this end,

Mr. Samaddar suggests that such Libraries should be started along with the other items on the programme of work of the Co operative Societies. The nucleus of a small library should at the start be utilized for the benefit of the rayats, the Secretary of the Society or a few members of the Village Panchayat should undertake to read useful books, magazines or weekly papers aloud to the Village folk regularly at some convenient place.

Those who have devoted some attention to the Oil industry of India, must have fully realised its importance and the unlimited scope which exists at present almost in all Provinces for its expansion. In spite of these considerations the fact remains that this industry with the exception of one or two mills is almost under a blight and the few attempts that are now and then made, have proved abortive. This is also the opinion of Mr. Kapilram K. Vakil, who has in his paper tried to trace the "causes of the general failure of this industry in the Bombay Presidency" (*vide P. 83*) Mr Vakil was specially deputed by some merchants of Bombay to investigate the subject and his report will be found useful by those who are interested in this business. Mr. Vakil possesses expert knowledge of the Oil-pressing industry and his views naturally deserve close attention and careful study

The causes which in his opinion have contributed to the failure of several Oil pressing Mills, at important centres like Bombay and Baroda, Surat, Poona and also in mofussil places, may be summarised thus —

- (1) Want of special knowledge or experience in the early promoters, who framed schemes with the aid of machinery agents, who were quite ignorant of the chemical and economic side of the business.
- (2) Uneven distribution of capital, i. e. investing too much in machinery and too little in building, and leaving no margin for the employment of chemical experts and for other working capital.
- (3) In seven cases out of ten, as a consequence of this unequal distribution and ignorance the mills had to be mortgaged from the very beginning;

- (4) Short sighted policy, in some cases, of the mill owners, the faulty economic basis on which some of the mills were managed and the regrettable want of honesty.
- (5) Wrong machinery with which some of the factories were equipped, e. g. machinery suited for castor seed was used for crushing Cotton Seed and so on.
- (6) Ignorance regarding proper principles and methods of treating and refining different kinds of Oil.
- (7) Defective arrangements for the storage of Cake, which soon gets spoiled, if not properly preserved.
- (8) Want of integrity in the agents of the foreign companies who purchase the cake.
- (9) High railway freight on oil and oil cake which make it non-paying when sent to Bombay which is the chief market.
- (10) Shortage of seed supply at some seasons of the year, when they had to be brought all the way from Bombay and reconsigned.
- (11) High prices of casks, loss by leakage in transit, gross adulterations practised by early shippers of oil to foreign countries.
- (12) Refusal of Indian farmers and cattle owners to use machine made cake.
- (13) Growing demand for mineral oils for lighting purposes, has also contributed to the decay of this industry.

Professor Russel of the Patna College contributes a very able and informing paper on the "Study of Economics in India" (P. 145). The main object is to prove that the charge that is generally levelled at the people of India, that they had never in the course of their history evinced an aptitude for the study of any other subject but metaphysics and abstract philosophy is utterly at variance with the facts disclosed by a close acquaintance with ancient Sanskrit literature which "best reflects the culture and civilization of ancient India." "It was",

says Mr Russel "in the ancient city of Pataliputra (present Patna) that the study of Economics was recognised more than 20 centuries ago as one of the indispensable branches of a liberal education." According to Artha Shastra of Chanakya, the science known as Varta of which Agriculture, Cattle breeding and trade were the main divisions, took rank as one of the four principal sciences and students invested with the sacred thread were directed to study it under Government Superintendents who were specialists in Economics," In the opinion of Prof Russel the growth of interest in economical problems, which is visible in India today, is not to be regarded as wholly a new or unheard of phenomenon alien to natural tendencies of the Indian people. The author, however, points out that within the last hundred years the subject of study and the scientific standpoint of its treatment have both been radically transformed. There are peculiar difficulties in the application of current theories on Economics to Indian conditions owing to the complexity of facts and the inclination of the human mind to bias as well as prepossessions. He then proceeds to explain lucidly the methods suitable to India that should be adopted for the study of this science.

Along with the above paper, should be read the account of the Patna College Chanakya Society (P. 173) written by its members for the benefit of the Industrial Conference. This Society which was formed in 1909 is working under the auspices of Professor Russel for the study of the works of Chanakya the great statesman, economist, political philosopher of ancient India, whose field of activity was Patna. The immediate object of this Society is to provide for its members an open field for original research and investigation and also to collect as much detailed, connected and trustworthy first hand account as possible of the Economic and social conditions of the people and villages around them in the hope that in course of time their investigations may be useful to the future economists of our country.

"The Importance of Manual Instruction" is recognised today in all the principal countries of the world and the need of its introduction (P. 91) in Indian schools is ably advocated

by Mr. H. G. Bhabha, retired Inspector General of Education in Mysore State. After entering into the technicalities of the functions of the brain and the structure of the muscles, he shows that the activity of the brain-cells depends on the exercise of the muscles and the complexity of their Co-ordination. It is from the age of about 4 to the age of 14 to 16 that the brain centres connected with the small muscles and the joints of the hand and fingers are developed. He thus puts forth the plea for manual instruction not only in Elementary Schools but also in High Schools. The muscular activities which the hands are likely to get at this period of life is not possible at a later age.

Drawing, claymodelling, brush work, stick laying, beadwork, brick building, paper cutting and folding, school gardening, cardboardwork are some of the activities suitable for boys and girls. This should be followed later on by metal work, such as lathework, filing, drilling, chipping, soldering and students of a Manual Training High School of America, in token of completion of their course leave behind as a rule a complete machine built by themselves as a proof of their skill. This is the kind of education given in foreign countries to strengthen, improve and elevate the character of the masses.

Dr R. V. Khedkar, State Surgeon, Kolhapur puts forth a plea for the "Preservation of National Art, handicrafts and character" (p 214) Dr Khedkar deplures that the old Indian Art is dying out and the people are imitating modern mores of life and tastes—conditions which are unfavorable to the development indigenous art. The repeated studies of labourers in Europe and America prove the fact that Iron machinery although it may turn out huge quantities for sale does not satisfy the wants of the poorer classes. To remedy this state of things, Dr Khedkar invites the attention of his countrymen to the silent but useful work which is being carried on by Madam A. L. Pogosky, a Russian Lady who has proved that if the faculty of intelligence, reason and intuition of the labourers has to be cultivated, it can be done only through the handicrafts instead of depending on machinery. This lady is an advocate of cottage

industries as opposed to the establishment of big factories with the aid of costly machinery. Development of spiritual character is also needed for improvement of national integrity.

We now pass on to the paper of Professor Radha Kamal Mookerjee of the Krisnath College, Berhampore on "The place of the domestic (*p. 99*) industry in Indian economic life." Prof Mookerjee treats first of the economic transformation of the Indian village and the gradual extinction of the cottage industries and the rural exodus to cities and other centres of industries conducted on modern lines. In his opinion the self-sufficiency of the village yet remains and the village is yet the real economic unit of India. "Of India" says he "more than of any other country, it can be said that the nation lives in the cottage." There are only 2,150 Towns in the whole country whose population exceeds 5,000 persons and the rest are all villages. The writer next asks the question as to whether it is desirable for India to adopt wholesale the method of Western industrialism and says in reply that the Western methods are not suitable to our environments and socio-economic condition, quoting Dr Coomaraswamy and a few other writers to support his contention. We may be pardoned for quoting the extracts here for the benefit of our readers.—

"The true end of material civilisation is not production but use, not labour but leisure,—not to destroy but to make possible culture. A nation which sees its goal rather in the production of *things* than in the lives of *men* must in the end deservedly perish" 1 "Already all over the Western world the problem which with ever increasing urgency demands a solution, if peace and progress are to be preserved is that of the persistence of undeserved poverty in the midst of abundant wealth, of unemployment in the midst of unsatisfied desires" 2 Again, "Never before in our history was the misery of the very poor more intense, or the conditions of their daily life more hopeless and degraded, the vast wealth which modern progress has created, has run into pockets of individuals and classes have grown rich beyond the reach of avarice, but the great majority of the toilers and spinners have derived no proportionate advantage from the prosperity which they have helped to create" 3

1 Dr A K, Coomaraswamy's essays in National Idealism, p. 155

2 Max Hirsch Democracy *vs.* Socialism, Introduction

3 Mr Joseph Chamberlain

The modern highly organised industrialism has resulted in an enormous disparity of wealth which is at the root of the present wide and manifold social evils, as the real wellbeing of the masses is sacrificed in the interest of concentrated production. To counteract these evil effects, Mr. Mookerjee, proposes the expansion of small cottage industries as much as possible, with the aid of cheap mechanical or electrical contrivances to render the task of the artisan easier without impairing his individuality, his inventiveness or dexterity.

Rao Saheb Ganesh Nagesh Sahasrabuddhe of Ellichpur has arrived almost at identical conclusions and advocates the "importance of small industries and indicates the scope for their development in India" (vide p. 337) Mr. Sahasrabuddh regrets the decadence of the ancient Indian industries in course of keen and unequal foreign competition. In regard to present day industrial activity in the country with the aid of the factory system and joint stock concerns the views of the author may be thus quoted in his own words —

' The conditions of Foreign countries and those of India are quite different in various respects. The people of England and other countries have been striving for the industrial development of their countries for the last 100 years. They have made great self-sacrifices and have now attained a position of great eminence in the industrial world, owing to the various facilities afforded to them, and the sound and practical education imparted in their Technical Schools and Colleges, Laboratories, Schools of Technology and other necessary institutions. They have become experts in every branch of industry and are systematic and honest workers on business lines. They have thus become armed with the most modern and scientific processes of manufacture, can command enormous capital to finance their concerns, and are fortified with high protective tariffs and are ever ready and able to take the least advantage that may offer itself. But the state of India is quite different. It is full of ignorance, conservatism and poverty. The country lacks skill, technical knowledge of the intricate processes of manufacture. Capital is abundant but shy. There is a lack of enterprise and business ability, and also of honest managers and systematic and earnest workers possessing self-reliance actuated by notions of self-sacrifice. Under these unfavourable circumstances, is it possible for India to work out industrial concerns with profit, and compete with the great competitors of the world abroad? Admittedly, the situation is very gloomy and one is tempted, through sheer despair to give up every thing for lost.'

The Annual Reports published by Provincial Governments on the working of Joint Stock Companies in India, disclose a

very dismal state of affairs and reveal the disadvantages of starting big undertakings, the failure of which brings in train the ruin of many capitalists and poor shareholders, the writer, therefore puts forward the plea in favor of small industries and quotes four or five authorities in support of his contention. The advocates of small industries argue that even in Western countries like England there is 'now a reaction against city life so full of hurry and bustle, smoke and squalor and "back to land" is the present cry. Mr Sahasrabuddhe defines small industries as those conducted with the help of steam or electricity employing less than 20 operatives each, and also such as are carried on by the hand, foot and animal power. He first takes the cotton industry and shows with the help of statistics the vast scope that still exists for the expansion of handloom weaving even in the face of the powerloom. The writer has proved that in the non-textile industries also there is limitless scope for those who will seriously devote their attention to the subject. In England itself which is justly looked upon by our countrymen as the model of industrial activity there are —

	No
Textile factories each employing 97 operatives on an average.	} 11,000
Non-textile factories employing 35 workers	
Small workshops do. 8 men.	] 89,000

The above figures speak for themselves, and are sufficient to dispel the popular illusion that there is no scope in these days for small capitalists.

The author proceeds next to give a list of nearly 44 industries which are successfully worked in England on a small scale to the mutual benefit of both the employer and the employees. The tenement Factories in Sheffield deserve a special study and may be described thus —

The "Tenement Factory" is habitual. A small foundry in the middle of the yard, the four sides of which are occupied by hundreds of small workshops, supplied with motive power from a central steam engine and these workshops are rented and sub-rented by the small masters. In Sheffield there

are now about 170 such tenement factories. In some, there are as many as 70 to 80 separate rooms or grinding halls, in others many less. There are approximately 2,900 occupiers who are first tenants, many of these sub-letting part of the rooms. In such tenement factories, you see rows of small rooms, two yards square in each of which one man, standing between his fire and his anvil, makes knife-blades, further on you find rows of workshops of the capacity of a good sized parlour, in each of which a master works with his few aids, making all possible, continually varying sorts of tools, and on the ground floor you discover equally small damp rooms, in which saws and files are fabricated; or slightly larger rooms, in which tools are polished and ground. About 15,000 men are employed in these tenement factories, making these tools and knives, which make Sheffield one of the most widely known towns in the world (p 36e.)

The thousand and one things of daily use are prepared in these busy agglomerations of small industries and the aggregate value of the products of these small concerns is nearly equal to the aggregate value of the products of large factories. Technical or specialised education, agricultural, industrial or commercial is necessary for the successful conduct of these industries.

The author gives a supplementary list of nearly 138 different suitable industries for men and 11 industries exclusively for women together with a list of the total number of Periodicals in foreign countries each devoted to some particular trade or industry. The total number of such Journals according to his estimate comes to about 2,400

It is within the recollection of our readers that Lt. col. Atkinson and Mr Tom S. Dawson were entrusted by the Government to institute an inquiry into the following questions —

- (1) What openings exist, for the employment of technically trained Indians and what further openings are likely to be available?
- (2) What types of men and standard of Education and training do employers of labour demand in the various industries?
- (3) Have these demands been met by the existing technical institutions?

- (4) If not, how should these institutions be altered or added to in order that they should be in a position to meet these demands?
- (5) What arrangements can be made for the systematic co-ordination between institutes and employers of labour, in order that they may work in with each other for their mutual benefit and for the good of the country?

The Report submitted by the above named officer about the "prospects for technically trained Indians" forms the subject of the paper of Professor V. G. Kale of Poona. (p. 403) The objects of the inquiry are indeed not unimportant. If technical education as at present imparted at principal Technical Schools and other institutes in India is carried on in a haphazard manner without studying the actual needs of the employers, waste of energy and time and consequent disappointment will be the inevitable result. "If the existing state of things continues, we may" says Mr. Kale, "have the double evil employers clamouring for the right sort of men" and "technically trained men failing to find employment." As these two officers were not called upon to take up the larger questions regarding (1) organisation of new industries, (2) the revival of old ones, or (3) of the turning out of men of enterprise and business aptitude, (4) the framing of any schemes of large and small technological institutes throughout the country to prepare people for higher professional careers, the scope of their inquiry was thus limited. The recommendations of the committee within the sphere assigned to them though adequate for purpose in view do not give any encouragement to those Indians, who agitate for larger and well equipped, technical institutions for more thorough technical training.

With the other papers on small industries received for the Bankipore Conference may be read the paper of Mr. Trimbak Ramchandra Kotwal Subordinate Judge of Poona, who puts forth a "Plea for cottage industries" (p. 218) while describing his impressions about the industrial exhibition and sale of the work of the Salvation Army in Bombay. The principal

objects of interest were the Exhibits of the silk and weaving industries. All the different processes connected with silk making in all its stages from the tending of the silk worm, reeling of the silk, to the weaving of the silken fabrics were kept on view. To demonstrate the weaving of cotton fabrics, the looms designed by the Salvation Army were shown while in actual operations. Several other smaller industries at present carried on by the Salvation Army bear ample testimony to the useful and philanthropic work of that body which aids the social regeneration of the lower strata of the Society, *viz* the depressed classes. Many of the industries deserve to be taken up in right earnest by the middle classes also.

Lala Panna Lall, Proprietor of the Upper India Glass Works, Amballa, gives very useful and practical information in his paper on "How to develop Glass making as a cottage industry, (p 231) Mr Panna Lall describes the process of constructing the smelting furnaces, crucibles required for these factories together with the kind of labour, ingredients, refining and colouring materials and plants and implements, moulds &c. The paper should be carefully studied by those already engaged in that industry and also by those who are thinking of starting a Glass Factory.

The Resolutions passed at this Session of the Conference will be found detailed in the body of the Report, and need not be repeated here to swell unnecessarily the volume of the book.

Summary of Proposals and Suggestions

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A —The work of the Conference.

1. The Industrial Conference should have an annual allotment of Rs. 25,000 in place of Rs. 5,000 and should employ more numerous staff, one to every department of Agriculture, Commerce, Industries, Mining, Co-operation and the like, and these men should travel to organise, educate and if necessary, to agitate (*Presidential address of Lala Harkishenlal*, p. xiii)
2. Want of capital and employment of inexperienced staff, will also account for several cases of failure and I think a careful enquiry should be made into the causes not by the people in a haphazard way, but by an experienced man sent out by the Industrial Conference. (*Ibid*, p. xxii.)

B —Agriculture

3. We want leaders, that is people who will equip themselves with modern knowledge and up-to-date methods and put them into practical use, with a view of enriching themselves and bettering the lot of their fellow countrymen. Special colleges may do a great deal in this respect, but agricultural chairs in connection with Indian Universities may do a great deal more, they will attract the attention of the highest few, to the subject of Agricultural Economy, and may make them return to land to become master-cultivators. (*Presidential address of Lala Harkishenlal*, p. xix.)
4. We want a spirit of emulation. This can best be secured by organising annual fairs of agricultural produce, village art and industry, cattle shows and physical feats. They should be introduced at all Tehsil headquarters, and worked not by official agency but by a mixed agency, say, Tehsil Board: (*Ibid*, p. xix)

- 5 We want co-operation in cultivation, harvesting, and marketing, as well as in credit. This should be attempted by starting Agriculturists' Associations, the educated agriculturists taking the lead, and the units of such Associations should not be larger than a Tehsil. (*Ibid*, p. xix.)
6. We must go a step forward in marketing agricultural produce, one degree removed from the shape in which it leaves the fields. By this I mean to say that flour and not wheat, oil and not oil-seeds, ginned cotton and not raw cotton, dried fruits and vegetables, where they can be dried, ought to leave the village. (*Ibid*, p. xix.)
7. We want transport facilities for grass, vegetables, fruit, ghee and cattle to near markets. (*Ibid*, p. xx)
8. For the proper working of an agricultural association three things are essential (1) right sort of men, (2) funds, (3) desire to work. (*Mr. V. K. Kogekar*, p. 213)

C—Education

9. For one generation at least the ambition of our educated young men should be to adopt a business career, in preference to an official, educational or professional and that parents should endeavour to give them an outfit qualifying them for this career and that the marriages of the young men to be dedicated to business, should be postponed even beyond the Vedic limit of 25 years. (*Presidential address of Lala Harkishenlal*, p. xi)
10. The Government, aristocrats, chiefs and the people should at once and without loss of time, provide the country with business and commercial Colleges, where a knowledge of business machinery, organisation, and efficiency and a knowledge of modern languages should be imparted. (*Ibid*, p. xi)
11. Chairs of Indian Economics and Agriculture be founded in connection with all the existing and projected Universities. (*Ibid* p. xii)

12. Economic Science should be studied by all our public men; and by the rising youths of the country with special reference to Indian problems. (*Ibid*)
13. Boards for Technical education should be inaugurated, and they should endeavour to grapple, with the assistance of public and subscribed funds, to raise the standard of efficiency of labour and to secure greater economy in all handicrafts, and factory industries. (*Ibid*, p. xiii.)
14. Assistant Directors of public Technical or Handicraft education, should be appointed in each province, with a similar system of State schools and Aided schools and Private schools open to Departmental inspection. Bodies like University Senates are required for looking after the Higher Technical Education of each Province or to start with each Presidency. The proposed new universities should be teaching institutions from the very start. (*Ibid*, p. xiv).

D —Labour Supply.

15. Capitalists should employ proper agencies for recruitment of labour in their prospectuses. (*Presidential address of Lala Harkishenlal* p. 11.)

E —Cotton Industry

16. The cultivation of finer stapled cotton, or the invention of machinery to produce finer yarn from present varieties of cotton, should receive our earnest attention; and also everything possible should be done to improve the cotton staple. (*Presidential address of Lala Harkishenlal*, p. xxviii.)
17. I would suggest the formation of an Association with headquarters at Delhi, the membership of which should be open to all the Mills in Northern India; and I would further suggest the formation of one or more associations of the people interested in growing, in buying and in selling cotton. I would also suggest the formation of one or more Institutes of Mechanical Engineers, and carding and spinning masters, with

associations which should try to improve the industry from the special points of view I may also venture to hope that one or more banks will be specially organised or one or more of the existing ones will specialise in financing cotton trade, cotton industry, export of cotton and import of cotton goods. (*Ibid.* p. xxxi.)

F —Silk Industry

The following suggestions have been made by Mr. M. N. De (*vide*, p 143)

18. Distribution of disease-free eggs to the rearers ; only licensed rearers should be allowed to sell eggs after microscopical examination. The Government must have examination offices in all the big centres of rearing where the Government officers should examine eggs free of charge or they may go from house to house examining the eggs.
19. Encouraging the rearers to rear one-brooded race in October and February, and Mysore or some well-established manybrooded hybrid races in other seasons. In order to induce the rearers, the eggs must be distributed free first.
20. In a new locality where there is no sericulture. castor silk worm eggs should be first introduced, as this race is more hardy.
21. The appointment of circuit lecturers who have expert knowledge of sericulture for advising the people.
22. The holding of competitive sericultural exhibitions in important centres.
23. The sanction of subsidies for sericultural classes in village schools, mulberry trees, cocoons, reeled thread, etc.
24. Free distribution of pamphlets in the vernacular of the district for the guidance of rearers.
25. The starting of Silk Associations whose object should be —

(a) to safeguard the interests of silk manufacturers, (b) to reply to queries regarding silk industry in general, (c) to send members to various exhibitions, (d) to bring together spinners, weavers and traders (e) to collect and disseminate useful information and statistics regarding silk, (f) to promote technical and commercial knowledge by starting schools for rearing, weaving and dyeing in important silk centres like Bhagalpore, Berhampore, Benares, Ahmedabad, Malda, Gurudaspur Nagpur, Madras, Bangalore, etc, (g) to induce the manufacturers and retail traders to demonstrate to the people, who are carried away by gaudy colours that Indian silk goods have got their own good points specially from the point of view of price and durability, (h) to secure just and equitable relations between the silk merchants and the rearers, (i) to expand the growth of industrial art, (j) to establish Libraries and museums on sericulture in silk centres, (k) to induce Government to take up sericulture in Khas Mahals and in Court of Wards estates thus setting examples to others, (l) to impress on manufacturers the advantages of Indian as compared with other silks and to be particular about the quality of the silk exported until a silk conditioning house is established in Calcutta or Bombay by the Government, which would stop the exportation of bad silk, (m) to establish co operative societies and guilds among silk growers and manufacturers.

26. The establishment of a central sericultural institute with branches in all the important places of silk rearing.

G—Sugar Industry.

27. The canes from which the cuttings are obtained should be (1) juicy (containing as little begass as possible), (2)

sufficiently thick, (3) joints at a long distance, *i. e.*, the length between the joints be as great as possible or should consist of as few joints as possible, (4) sweet, (5) drought resisting, (6) healthy never affected throughout the season by any disease, fungi or frost etc. (7) of healthy complete eyes, (8) of very thin joints, (9) long, (10) full of juice inside, (11) of a very thin bark, (12) should not crack on the joints and split up in twain. (*Babu Mukhtarsing*, p. 254).

H —Capital and Co-operative movement

28. We must save, invest and organise before we could have a capital Fund to back our industries. (*Presidential address of Lala Harikishenlal*, p. xxxv.)
29. The best way to attract foreign capital would be to introduce large and well-considered schemes with mixed boards. But schemes which are State-aided or aided by Native States or local bodies will have a better chance. (*Ibid*, p. xxxvi)
30. We should establish a sound and solid banking system in the land. With the number of Banks already started, I would propose the formation of a Banking Association, without any loss of time ; and would urge thereby the discussion from time to time of questions vital to the existence, continuance, permanence and prosperity of the Banks. (*Ibid.*)
31. A very useful system of Banks could be devised by the help of Native States somewhat on the lines of Presidency Banks and Discount Banks combined. (*Ibid*, p. xxxix.)
32. Railways should attract Indian Capital when their earnings amount to 6 per cent, and over. (*Ibid.*)

I —Life assurance

33. I would draw the attention of my countrymen to this branch of financing institutions, and would like them at once to combine into an Association, to develop Insurance

on healthy lines, covering all departments of risks.
(*Presidential address of Lala Harkishenlal*, p. xxxix.)

J.—Miscellaneous.

34. The country should be studded with Chambers of Commerce, walking in the footsteps of similar institutions now existing in European countries; whose function should be to find a business career for honest, capable, and willing educated Indian youths. (*Presidential address of Lala Harkishenlal*, p. xii.)
35. Special associations, such as of cotton spinners and weavers, cotton dealers, of Bankers and of Insurance Companies be started at central places, to look into the interests of their special concerns. (*Ibid*, p. xii.)
36. Government should throw open to Indians half the top appointments, in all its Technical departments, namely Railways, Telegraph and Post Offices, Forests, Surveys, Geological and Meteorological Departments, Irrigation, Electrical and Mechanical Workshops, Electric Supplies, and Civil Engineering. (*Ibid*, p. xii.)
37. Special and sufficient provision be made in all Local Councils and in the Imperial to have Commercial and Industrial representation. (*Ibid*, p. xii.)
38. The commercial departments of the Government of India should see to the needs of Indians as well to those of Europeans; and that they should back Indian efforts as often as of outsiders. (*Ibid*, p. xii.)
39. Native States should help the movement of economic regeneration, as they represent $\frac{1}{2}$ th of the whole of India; and means should be found to have their co-operation with the Government, and the people of British India, instead of their making isolated efforts. (*Ibid*, p. xii.)
40. European Manufacturers, Bankers, Insurers, Exporters, Importers and Transporters should advance Indians beyond the position of clerks, and entrust them with

duties requiring intelligence, responsibility and capacity.
(*Ibid*, p. xiii.)

41. Swadeshism should be taken at its word and be organised principally in the channel of capital (*Ibid*, p. xiii.)
42. Public press should give more attention and space to economic questions rather than to general news, political discussions, racial bickerings and individual panegyrics (*Ibid*, p. xiii)
43. The Government, the native rulers, the public bodies, and the patriotically inclined gentlemen could do a lot of good by publishing in advance well-considered information on any new scheme put forward, and if the commercial department of the Government of India leave off its traditional shyness, and advise and seek advice and communicate the same to the new venturers it might do a real yeoman's service (*Presidential address of Lala Harkishenlal*, p. xxxvii-)
44. The Government should produce stuffs so largely used by its departments by means of *pioneer* industries, which may after a while be transferred to the people on payment of a portion of the money in hard cash and the balance by way of deferred-payment debentures. (*Ibid*, p. x)
45. Well known methods of marketing of goods such as holding of Exhibitions and Fairs, and of advertising are badly needed to help the enterprising and the struggling manufacturer (*Ibid*, p. 11)
46. If Government will make Railways a National monopoly, great things may come out of it in India. Let Indians be gradually, posted to high places of its administration and Indian ideas and suggestions be invited to make it a National concern. It is the largest Industry no doubt but the people have paid the smallest attention to it so far. (*Ibid*, p. ix.)

RESOLUTIONS

PASSED AT THE

Eighth Indian Industrial Conference

HELD AT BANKIPORE

On Monday, the 30th December 1912.

RESOLUTION I

The Delhi Outrage.

The Indian Industrial Conference expresses its indignation and abhorrence at the dastardly outrage committed upon the life of His Excellency the Viceroy and begs to offer its respectful sympathies to Their Excellencies Lord and Lady Hardinge and the Conference fervently prays that His Excellency will have a speedy recovery and restoration to health

Moved from the Chair.

RESOLUTION II.

Agriculture and Commerce

In view of the great importance of properly developing agriculture and Indian Commerce, this Conference urges upon Government and the people the urgent necessity of establishing Chairs of Agriculture and Commerce for spreading knowledge of the general principles of these subjects among persons who do not wish to specialise in them; and for the suitable advancement of Technical Education, the Conference strongly advocates the creation of Boards constituted on lines similar to the Senates of Universities for directing and regulating instruction therein.

Proposer—Hon'ble Rao Bahadur R. N. Mudholkar.

Seconder—Hon'ble Babu Krishna Sahay.

RESOLUTION III

Indian Chambers of Commerce.

This Conference draws the attention of the commercial and other business classes

- (a) to the great necessity of establishing Indian Chambers of Commerce and Associations of the Industrial and Financial interests, wherever favourable circumstances exist and
- (b) to the importance to themselves and to the country of their engaging to a greater extent than hitherto, in the foreign trade of the country.

Proposer—Mr. L. V. Kaikini.

Seconder—Dr S. V. Ketkar.

RESOLUTION IV.

The Atkinson—Dawson Inquiry.

This Conference expresses its disappointment at the recommendations made by Lieutenant-Colonel Atkinson and Mr. Dawson in regard to higher Technical Education and expresses its disagreement with the recommendation in regard to the State Technical Scholarships, as these recommendations are not calculated to secure that higher type of knowledge of principles and practice which is required for organisation, direction and management of industries.

Proposer—Mr. N. A. Dravid.

Seconder—Mr. M B Sant.

RESOLUTION V.

Polytechnic College.

While expressing its appreciation and thankfulness to the Government for the liberal action taken and contemplated, in regard to Technical education, this Conference once more records its firm conviction that for placing the cause of industrial progress on a firm basis, it is most necessary that the Government should

establish in the country at least one fully-equipped Polytechnic College for imparting the highest kind of instruction in the applied sciences and industrial arts.

Proposer—Honourable Babu Dwarkanath

Seconder—Mr. Mithila Saran Sinha.

RESOLUTION VI.

Technical Education.

This Conference urges all Provincial Governments and administrations, Rulers of Indian States, as well as Principals and Superintendents of Private or Aided Schools and Colleges, to add Commercial, Technical and Industrial classes for instruction in commercial subjects as well as in weaving, dyeing, sheet-metal working, smithy, carpentry etc., to the existing courses of instruction, wherever practicable.

Proposer—Mr. Moulvi Mahamad Hussain.

Seconder—Mr. Chandrabhan Sahay.

Supporter—Mr. G. N. Kane.

„ Mr. G. K. Harkare.

RESOLUTION VII.

Failure of Industrial Enterprises.

This Conference notes with regret and concern the failure of several industrial enterprises started for carrying on new industries and the effect these failures have produced in damping the ardour of the people in the development of the resources of the country. The Conference calls upon the leaders of the people in the different Provinces and Districts to institute inquiries into the causes of these failures and to communicate to the General Secretary the results of their inquiries, and authorises the General Secretary to depute one or more persons for conducting this investigation, if the funds at his disposal permit.

Proposer—Professor Jadunath Sarcar.

Seconder—Rai Narayan Prasad Sahib.

Supporter—Mr. K. P. Sen Sinha

„ Rao Saheb Ganesh Nagesh.

RESOLUTION VIII.

Hand-loom Weaving

This Conference specially invites the attention of the capitalists to the great and urgent necessity of improving the existing condition of the weaving industry by the introduction of labour-saving hand-loom and other devices of approved patterns, in important centres of the Hand-loom weaving industry, with the co-operation of the weaving classes

Moved from the Chan.

RESOLUTION IX.

Railway Rates.

This Conference once more calls the attention of the Government to the prevailing complaints about the anomalous character of the existing Railway rates on goods and their prejudicial effect on interprovincial trade, and urges the necessity of laying down, for interprovincial consignments, the same scales of rates as those for consignments to and from important ports.

Moved from the Chan.

RESOLUTION X

Faculty of Commerce

This Conference records its sense of gratitude to the Government of Bombay for having created a Faculty of Commerce and urges the other local Governments and Universities in India to follow the example of the Bombay University in establishing Faculties of Commerce for giving an impetus to Commercial Education.

Moved from the Chan.

RESOLUTION XI

Provincial Departments of Industry.

This Conference once more urges that

- (a) There should be in every province of British India, a Department of Industry under a Director of Industries to deal with purely industrial questions and to be in charge of Technical, Commercial as well as Industrial Education in the Province, and that there should be an advisory board of qualified persons, not less than one half of whom should be non-official Indians who should be consulted on economic questions of importance; that the functions of this department should include (1) the introduction of new or improved methods and processes, (2) the carrying out of investigations and experiments, (3) the development of selected industries, and (4) the organisation of industrial and commercial Exhibitions
- (b) That there should be an Industrial Museum and bureau of information under the Department of Industry for supply of information and advice to the public on all Industrial and Commercial matters within the province.

Proposer—Honourable Mr Gokuldas K Parekh

Seconder—Babu Ram Gopal Choudhary.

RESOLUTION XII.

Co-operative Banks.

This Conference once more welcomes the establishment in the Bombay Presidency of a Central Co-operative Bank and urges upon the Government and the people of other Provinces, the need of establishing similar Banks to help the existing Co-operative Credit Societies for advancing loans at reasonable rates and on easy terms to the agriculturists.

Proposer—Rai Purnendu Narayan Sinha Bahadur.

Seconder—Mr. L. V. Kaikini.

RESOLUTION XIII.

Miscellaneous

This Conference confirms the resolutions passed in previous years :—

- (1) Calling upon the Government and the people (a) to encourage and help Indian manufactures and (b) to foster and encourage the use of such manufactures ;
- (2) Recommending to the people the desirability of starting Funds for the promotion of Technical and Industrial Education ,
- (3) Inviting the attention of capitalists in India to the urgent need of developing and fully utilising the mineral resources of the country and asking them to make organised efforts in that direction ,
- (4) Urging upon the attention of the Imperial Government the special claim to consideration of the Textile and Sugar Industries , and praying for the repeal of the excise duty on Cotton goods ,
- (5) Urging upon Government the desirability of the standardisation and unification of Weights and Measures so as to remove the serious inconveniences caused to trade by their multiplicity.

Proposer—Mr. Mathura Nath Sinha.

Seconder—Mr. S. V. Lalit.

RESOLUTION XIV.

Co-operative Credit Societies.

This Conference expresses its great satisfaction at the progress which Co-operative Credit has made in this country since the passing of the Co-operative Credit Societies' Act of 1904, and earnestly hopes that with the wider application of the principle of Co-operation under the Co-operative Societies' Act of 1912, Government will give larger financial and administrative facilities which are needed to secure a surer growth of Co-operation and

exhorts the educated public to strenuously extend its operations to various branches of agriculture and small industries which are bound to prosper with the help of the Co-operative movement.

Proposer—Mr G. K. Devadhar.

Seconder—Mr R. V. Mahajani

RESOLUTION XV

Sir T. Palit's Gift.

This Conference places on record its sense of gratitude to Sir T. Palit of Calcutta for his munificent gift to the Calcutta University and expresses the hope that his example would be followed by others

Moved from the Chair

RESOLUTION XVI

Office Bearers.

The Honourable Rao Bahadur R. N. Mudholkar be appointed General Secretary of the Indian Industrial Conference for the next year, Mr. N. A. Dravid, Honorary Assistant Secretary and Mr. M. B. Sant, Assistant Secretary and this Conference appeals to the public for a sum of Rs 8000 to carry on the work of the Industrial Conference

This Conference deems it desirable that there should be a Standing Committee appointed for each year to co-operate with the General Secretary in carrying on the work of the Conference during the year and to advise him on all such matters as he may submit to them and that the following gentlemen do constitute the Standing Committee for the year 1913 —

Sir R. N. Mookerji.

Lala Harkishen Lal

Mr. J. Chaudhari.

Sir Vithaldas D. Thackersey.

Mr. D. E. Wacha.

Hon'ble Mr. Lalubhai Samaldas.

Dewan Bahadur P. Rajaratnam Mudaliyar,

Dr. Satish Chandra Banerjee.

Mr C. Y. Ohintamani.

Rai Purnendu Narayan Sinha Bahadur.

Hon'ble Mr M. B. Dadabhoy.

Hon'ble Babu Krishna Sahay.

Hon'ble Rao Bahadur R. N. Mudholkar (*Ex-officio*).

Proposer--Hon'ble Mr Krishna Sahay.

Seconde—Professor Jogindra Nath Samaddar.

HARKISHEN LAL,

President,

Eighth Indian Industrial Conference.

R. N. MUDHOLKAR,

General Secretary,

Indian Industrial Conference.



PROCEEDINGS

OF THE

Eighth Indian Industrial Conference.

The Eighth Indian Industrial Conference met at the Congress Pandal at Bankipore on Monday the 30th December 1912, at noon

At the appointed time, Lala Harkishen Lal, B A, Bar-at-Law, Lahore, the President—Elect accompanied by the Hon'ble Mr Justice Syed Hassan Imam, the Chairman of the Reception Committee, the Hon'ble Rao Bahadur R N Mudholkar, the General Secretary of the Industrial Conference, the Honourable Rai Bahadur Krishna Sahay Prof J. N Samaddar and other distinguished gentlemen, entered the pavilion under an escort of Industrial Conference Volunteers supplied by the Patna College Chanakya Society, and took his seat on the dais amidst loud cheers The following gentlemen were also noticed among those present —The Hon'ble Mr S Sinha, Mr. C Y. Chintamani, The Hon'ble Babu Dwarkanath, Professor Jadunath Sarkar, Rai Narain Prasad Saheb, Mr. K P Singh, Rao Bahadur Mundle, Rao Saheb Ganesh Nagesh Sahasrabuddhe, Mr R. P. Sen Sinha, The Hon'ble Mr. Gokuldas K Parekh, Rai Purnendu Narain Sinha Bahadur, Babu Ram Gopal Choudhary, Messrs N A Dravid, G K. Devdhar, Pandit Ramakant Malaviya, Babu Sheo Prasad Gupta.

The Proceedings were formally opened by the Hon'ble Mr. Justice Syed Hassan Imam, the Chairman of the Reception Committee, who in welcoming the delegates said —

Speech of the Chairman of the Reception Committee.

Gentlemen, on behalf of this Province, it is to me a privilege and a pleasure to give you that welcome which it is your right to expect and which it is the wish of the Province to express to you through me I do not, personally speaking, desire either to anticipate the points that will arise for discussion in this Con.

ference nor do I think it is expected from one who is the mouth piece of the hosts, that have the honour of entertaining you to-day to undertake to forestall the speakers who will deal with the various subjects that will be raised for discussion. I consider that my duty, as the Chairman of the Reception Committee, lies only in expressing on behalf of the people, who have elected me to this position, to you one and all, a welcome full of warmth and cordiality. You are going to have as your President for this 8th Industrial Conference, a gentleman, whose name stands for all, that is in the interests of the Industrial progress of the country I do not require to introduce to you in glowing terms, the name of Mr. Harkishen Lal (cheers), for indeed, if there were any occasion for me to introduce him to any one of you, I would be reflecting on you for your ignorance, for who does not know the honoured name of Mr. Harkishen Lal and connected him with all the Industrial movements of the country? (Cheers.) You all know for yourselves, because you realise it in the every day affairs of your home what an important part industrial progress plays in the making of a nation. That the pulsations of national life derive their vitality from the peaceful arts of Industry does not require to be dwelt on by me, you realise it in the daily affairs of your life. I, therefore, invite the President—elect Mr Harkishen Lal to take the chair, which is his by your choice and by your suffrage. Mr. Harkishen Lal, I request you to take the chair (cheers).

The President Mr Harkishen Lal after due election delivered the following address —

Presidential Address.

GENTLEMEN,

In the first instance, I wish to express my sincerest thanks for the very high honour you have conferred upon me in asking me to-day to preside over this Conference. Men, who have occupied much higher positions than myself, have felt themselves honoured in being invited to occupy this chair, so it is needless for me to say that I feel very much beholden to you all, for the great honour that you have bestowed upon me

Gentlemen, before proceeding further you will all join with me in deprecating with all our power and influence the dastardly

attempt that disfigures the bright horizon of well ordered progress. Of late years a mania for bomb-throwing at English officers and killing people who are supposed to help in the detection of these heinous crimes has taken hold of a few disturbed minds. I wish I knew them all to lay before them the ill-effects of disturbing an ordered state of things that has been established in this country by the genius of the English race. If these maniacs have no human sympathy left in them, they should at any rate realize, in the interest of the country they profess to love, that our future is all tied up with a steady and orderly progress, and it is not possible to make any progress whatsoever if the present Government were to change. They must also realize that the power of the English does not lie in a Lord Hardinge or even a Mr Gladstone or Lord Roberts but in the race and a few bombs, even if they all prove fatal, will not succeed in exterminating, the race that the All-powerful, All-seeing and All-just has placed over us to guide our destinies, as I believe, to a bright future. I appeal in the name of Mother-India that we have all learnt to sing about, that patriotism requires that our young men should be turned to the best service of the country which consists in helping the present order on to a noble goal. I trust you are all of the same mind as I am in condemning these dastardly acts and are ready and prepared to extend our active sympathies towards the British people who are so helpful to us and to our future elevation. You will also join with me in wishing Godspeed to Lord Hardinge in his noble mission of cementing all races and classes.

2. Gentlemen, the Industrial Conference has already been held, seven times, under distinguished auspices, and under the Presidentships of gentlemen who were experts, and well-informed authorities on the subject of industrial requirements of India, and who have already in their addresses, surveyed the field from Peking to Peru. The various reports of the Industrial Conference shew, that a large number of suggestions have been already made, by eminent authorities and thinkers, for rejuvenating decaying industries, for introducing new industries, and for advancing and improving existing industries. The conditions, social and political, under which industries flourish and decay, have also been reviewed; and some very valuable contributions have been made to the history of nations' industrial rise and fall. The

most important industries, such as cotton and sugar, oil and mining have been treated at some length, and elaborate papers have been contributed on several other matters. A comprehensive survey of the economic field has also been attempted, therefore, at first sight, nothing, it would appear has been left for the new comer. He must, it would appear, dish up anew old food with fresh spices. It would, at best be an increasingly difficult position for a new comer, to survey the whole field once again, it is therefore humbly suggested that if special subjects are treated by the Presidents. and specialists only are invited to preside, we may be finding a way out of the difficulty. But as the time-honoured practice has not been officially countermanded, I shall be guilty of introducing an innovation if I attempted any such thing, hence I will confine myself to a general survey of the economic position, which in the nature of things, cannot, in the short space of time allowed for the preparation of such speeches, be made, by any means, exhaustive, deep or complete. I would therefore crave your indulgence for the very cursory survey that I shall present to you, and shall be content if I am able to supply some food for reflection to some of my countrymen.

Economic Position of India.

3. That the economic position of India is at about the lowest rung of the ladder is now universally admitted. A recent visitor from British Isles recorded his impressions in the following terms —Speaking of the multitude of men, women and children he described them as “a little below the most meagre comfort, and a little above the nearest road to starvation”. “The country” he goes on to say “looks homeless. It leaves an impression of poorness and melancholy. The villages are piteous clusters of mud walls, daubed round the sides of a thickpond in the bare earth”. Another writer says that “they describe a state of society which to English eyes is almost inconceivably simple and elementary, destitute of comforts and conveniences that we are accustomed to regard as essential to civilised life”. After fairly considering the two sides of the controversy the same writer proceeds to say —“Let us look somewhat more closely into the facts. The total population of India, including that of the protected Native States, is three hundred and fifteen millions,

three-fourths of this vast population is supported by agriculture ; the area under cultivation is not accurately known, as the returns from the Native States are incomplete. But we shall not be far wrong if we assume that there is less than one acre of cultivated land per head of total population, and not more than one acre and a quarter per head for that portion of the population which is directly supported by agriculture. Subtracting the land utilised for supplying foreign markets from the total area under cultivation, we shall find that what is left does not represent more than two-thirds of an acre per head of the total Indian population. India, therefore, feeds and to some extent clothes its population from what two-thirds of an acre per head can produce, there is probably no country in the world where the land is required to do so much." Further on he says "It may also be inferred that the average income of the peasant cultivator is very small. The net profit obtainable from an acre of land seems to us altogether inadequate for one person's support, and our conclusion would be the same if we take a family of five, namely, two adults and three children, and a holding of five acres as the unit. But according to Indian ideas and a traditional standard of very thrifty and frugal living, five acres of good irrigated land will support such a family comfortably. But all the land in India is not good, and every peasant's holding is not a five acre plot. Some peasants hold considerably more than five acres, consequently others hold less. And when we get down to the man who holds less than five acres of land and that of poor quality, then there is a want and a hard struggle for existence. That man and his household are poor even in the Indian sense of the term." "Below the peasant class there is a large class of landless folk, who also find support from the land by working for the well-to-do cultivators in return for a wage." "There are also other residents of the village who do not actually cultivate land, but yet are indirectly supported from it, such are the village blacksmith and the carpenter who make ploughs and other agricultural implements, the barber, the cobbler or leather worker, the washerman and the waterman, all these receive doles of fixed amounts from the grain heaps at harvest time, and other dues and perquisites." "No one," the writer continues to say. "would pretend that this Indian village life is ideal, or unaccompanied by much that is distressing to the human mind to contemplate."

4. Such in broad outline is the structure of rural life throughout India. It is the life led by nine-tenths of the population, only the remaining tenth live in towns with over five thousand inhabitants. We hear of the great cities of India, but they can almost be counted on the fingers of one's hands. There are not ten cities and towns in India with a population exceeding two hundred thousand. Of these four are maritime towns, whose creation is largely due to British Capital and Commerce; four (Delhi, Lahore, Lucknow, Ahmedabad) are the capitals of former dynasties, while one (Benares) is the holy city of Hindustan. Contrast this with England where ninety per cent of the population live in towns, containing ten thousand inhabitants and upwards, and twenty-five per cent live in towns with over two hundred and fifty thousand inhabitants.

5. Of the remaining 10 per cent it is not easy to draw a picture like the one one can draw about the main Indian Industry, namely, agriculture; these ten per cent comprise commerce, administration, defence, household and sanitary services, gentlemen at large, builders carriers, learned and artistic professions and miscellaneous avocations. The condition of these people from the Indian standpoint of view, may not be low; but it is nothing like what it is with similar classes in the advanced countries of Europe or America. We know their likely incomes, from the incometax statistics, and we also know from actual observation that there is not much to be proud of.

6. (a) There are certain figures, collected from general publications, which are worth reproducing to realise the correct situation. The number of persons assessed for income-tax in the year 1909-10 was only 275,623, inspite of the great vigour, now being shown in this respect under the name of "improved administration". In connection with this revenue the Government Blue Book remarks that a large proportion of the revenue is collected in Calcutta and Bombay.

(b) Post Office Savings Banks which have been in operation near about a quarter of a century show a total of deposits amounting to £11,279,215 at the end of year 1910-11 comprising 1,430,451 accounts consisting of—

1. Professional	...	.	...	...	459,771
2. Domestic ..	..	..	..	...	241,104
3. Commercial		..	..	..	59,735
4. Agricultural	..	...	...	...	32,395
5. Industrial ..	...	..	...	..	54,061
6 Others	...	...	...	...	583,385

these figures represent the working of 8,929 Post Offices.

(c) The Banking deposits of the whole country amounted to less than eleven crores inspite of the fact that special efforts have been put forth in this direction during the last 5 years.

(d) The total number of factories worked by mechanical (including electric) power, owned by Companies or private persons in British India, and returned as registered under the Act was 2,146 in 1910. The classified list of these factories according to official records is as follows ;—

Description.	No. of Works.	No. of Operatives.
Cotton presses	1,057	99,077
Cotton mills	215	216,883
Jute presses	103	28,327
Jute mills	59	204,053
Rice mills	224	20,368
Flour mills	32	3,111
Sugar factories	21	5,424
Saw mills	96	10,583

Iron and brass foundries	58	24,368
Indigo factories	...	17,337
Tile factories	14	5,293
Printing presses	18	13,971
Dockyards	9	10,392
Railway Workshops, etc.	47	72,000
Petroleum Refineries	6	8,735

(c) The Indian Railways consisting of 33,000 miles of track in 1911 employed 7,699 Europeans, 9,554 Anglo-Indians and 5,22,741 Indians which figures, we may presume, include 72,000 operatives employed in Railway Workshops.

Review of above and General Introduction

7. From the above it is clear that from the two sources of support, of the vast population of India namely. Agriculture and Industry, it could not be expected that large savings of Capital would be possible, unless agriculture was made more intense and extensive, and labour was drifted partially from Agricultural to Industrial pursuits. The other sources of income like the Forests, Mining, the Fishery and Commerce should not be neglected, and should receive attention as well as agriculture and manufactures. A mere statement of facts and expression of pious opinions will not effect much. A careful examination of all the factors, that help production, cheapen distribution, avoid waste of commodities and energy (both human and physical) and reduce the drain, is needed. A thorough study of conditions, political, social, religious, educational and moral has to be made so as to effect the economic elevation of the country.

Impossibility of Complete Treatment

8 Now, gentlemen, to attempt to accomplish all this in the course of an Address, however elaborate, is an impossibility; and I should not like to be guilty of attempting what is not possible; but with your permission, I will venture to offer passing remarks on various questions that arise, in the consideration of the topics

just mentioned, and I shall be pardoned if the treatment of the subjects is but meagre.

Agriculture

9. Let us take agriculture first. This is the mainstay of India. It is carried on now in very much the same fashion as it has been for ages past. Optimists may describe the situation as follows:—"Not only does the land of India provide food for the great population, for with the exception of some sugar no food is imported from other countries, but a very considerable portion of it is set apart for exports. India supplies the whole world with jute, its cotton crop is the second largest in the world. It sends abroad very large quantities of rice, wheat, and oil seeds. In fact it pays its bill for imports of merchandise and treasure and discharges its other international debts mainly by the sale of agricultural produce." A pessimist, however, observes that—"We are now in a position to apprehend the significance of famines in India. A country that depends almost entirely on agriculture carries its eggs in one basket. If the crops are bad, its only industry ceases to produce and everybody feels the effect. Indian agriculture depends on the seasonal monsoonic rains, and these rains are sometimes insufficient and occasionally fail altogether."

Water-Supply.

10. This at once raises the question of supply of water for the cultivation of land. We know as a fact that India is blessed with rivers in the north, throughout the whole breadth of the country, and the Central and Southern parts of India are also not without their rivers. There is an underground supply of water, which has been tapped from time immemorial, and recent investigations prove that there are sources of water underground, still lower down, which modern science may be able to tap with means which were denied to our ancestors. The "Monsoonic" supply of water is allowed to run waste in many cases; the rivers pour their waters into the seas unused, and the underground sources are not tapped properly. In some cases, want of means stands in the way and in others the cost of lifting the water is prohibitive. Thus the need of canals, drains, tanks and scientific appliances for boring and lifting water is fully established. The Government of

India has a fixed programme for helping the country with a better water-supply, from rivers and tanks but whether it is a sufficient programme is a question too difficult to be handled properly in this place; but the rulers of the Native States, the landed magnates and the capitalists have not, to any appreciable degree, shown their inclination in this direction. They may be respectfully invited to co-operate with the Government in this matter. This will afford a field for making several undying reputations, and I have no doubt that future generations will bless and cherish the memory of those who will help the country in this respect. While an increase of supply of water is wanted, economy in the use of water is also required. How to effect this is a question for some intelligent and educated agriculturists to decide.

Agricultural Crops

11. India grows food grains, (rice, wheat, millets, gram, other pulses and grains), oil seeds, sugarcane, cotton, jute and other fibres, (and some fruit and timber which owing to their insignificance are not mentioned in official reports). It is said that the food grains now grown in India, not only supply the food for the people, but leave over a surplus for export. Opinions on this question are not unanimous. It is still uncertain whether the export of food grains represents a real surplus or a corresponding starvation or semi-starvation of a large population. However that may be, the landholder cares to grow only what he can sell, what he can grow easily, and what is required for his own use. He is not patriotic enough to refuse to sell outside India what may be required for his own people in the country, nor is he ambitious enough to cultivate crops which will fetch a better value. Example should, therefore, be set by enterprising agriculturists to raise more valuable crops such as cotton, sugarcane, tobacco, fruits (that can be preserved) and timber that can be used for manufacturing purposes at home and abroad. The food crops should be more evenly distributed, and we should expect a larger consumption of food grains per head of population, if the vitality of the race has to be improved.

Crops.

12. It is not only that more land has to be broken, and brought under the plough, and a larger variety of crops has to be

grown, but better crops have to be raised both in quality and quantity. It is now a common place of knowledge that an acre of land produces larger crops in America, England, France and Germany than it does in India, and that their produce is in every respect of better value. I do not propose to enter into the details of measures to be taken to bring about these results, but I have drawn attention to the fact in order that if greater wealth is required in the country, it must be remembered that the resources of agriculture have not been exhausted; and that there are possibilities still immense for a better supply of the creature requirements and comforts of the vast agricultural population, and that thereby a very much larger surplus can be raised for the common weal.

(a) We want leaders, that is people who will equip themselves with modern knowledge and up-to-date methods and put them into practical use, with a view of enriching themselves and bettering the lot of their fellow countrymen. Special colleges may do a great deal in this respect, but agricultural chairs in connection with Indian Universities may do a great deal more, they will attract the attention of the highest few, to the subject of Agricultural Economy, and may make them to return to land to become master-cultivators.

(b) We want a spirit of emulation. This can best be secured by organising annual fairs of agricultural produce, village art and industry, cattle shows, and physical feats. They should be introduced at all Tehsil headquarters, and worked not by official agency but by a mixed agency, say, Tehsil Boards.

(c) We want co-operation in cultivation, harvesting, and marketing, as well as in credit. This should be attempted by starting Agriculturists Associations; the educated agriculturists taking the lead, and the units of such Association should not be larger than a Tehsil.

(d) We want a step forward in marketing agricultural produce, one degree removed from the shape in which it leaves the fields. By this I mean to say that flour and not wheat, oil and not oil-seeds, ginned cotton and not raw cotton, dried fruits and vegetables, where they can be dried, ought to leave the village instead of the present day-system.

(e) We want transport facilities for grass, vegetables, fruit, ghee and cattle to near markets.

Cattle.

Gentlemen, even an Indian frugal and thrifty as he is, does not live only on food grains, and vegetables, but requires to swallow his food tinctured with a little *ghee*, and occasionally meat. He requires cattle for these purposes, and also as beasts of burden and as helpmates in the cultivation of land and raising of water. Are we doing all that is possible in the farming of cattle and poultry? I have no hesitation in saying that this branch of agricultural industry, is left entirely to chance and fate. There are large wastes in the mountains, sub-mountains and in the country itself, owned by State, Native States and the people, which could I think be utilised for an increased supply of mutton, meat, wool, ghee, butter and milk, to increase both the vitality and the wealth of the people

Manures

13. In the economy of agriculture, you are well aware while a better knowledge of methods of cultivation, and preparation of land and preservation of crop is required, while a more copious supply of water is needed, while a greater care in the use of water-supply is essential, while a greater variety of crop is needed, and while cattle has to be reared as regular concerns, one other factor, the food for the land I mean manures, has also to be considered. All people who have any knowledge of cultivation know the use of manures, and curiously enough, manure, which is the food of the land, comes out mainly from its waste products, and excrecences of animals. In some rough form these have been used as fertilisers from time immemorial, but that they can be made a great deal more efficacious by a little effort is a well-known proposition.

Grasses.

14. While speaking of cattle, animal produce, and manures, one's attention is naturally drawn to a crop not much cared for at present, but which, with a little more attention can be made to yield results out of all proportion to the time taken. I am referring

to grasses, growing naturally or as the results of human labour. It is claimed that owing to transport facilities, afforded by railroads and public roads, and growth of surplus crops in Canal Colonies the famines, or at any rate general famines, have become a thing of the past. We need not stop to argue out the position thus taken, but no attempt has ever been made to prevent fodder famine. Leaving aside the question of human sympathies for animal life, all the world over, and more especially in India, what an amount of wealth and resources of agriculturists is destroyed in time of draughts which cripple the agriculturists for many a year to come. That cattle is a valuable asset in the cultivation of land, and a very important factor in rural economy, no one will question. Means are, therefore, required to be taken to have a plentiful supply of food for cattle available at all times. The food of cattle at present consists of certain grasses, vegetables, stems of food grains, leaves, grams and cakes, unlike Europe where a greater part of food for cattle consists of artificial preparations, mostly consisting of outer shells of grains called refractions or pollards.

If it is desired to improve the lot of agriculturist, the life of cattle should be our care as much as the life of the man himself. It is therefore essential that attention should be paid to the selection and growth of grasses, their preservation and easy transport. It is also necessary that if food has to be exported to Europe, it should be exported in a form which will leave behind that portion of grain which is required for feeding cattle. I mean devices should be invented to export flour and dal rather than wheat and pulses and similarly oil should be exported rather than oil seeds.

15 This brings us to the consideration of the questions of industries arising directly out of agricultural products, but we may defer the subject to its proper place and deal with it when we come to deal with subject of Industries as a means of production of wealth.

16. These few suggestions have been made, as all of us are convinced that India is essentially an agricultural country, and from the consideration of the whole economic position it is clear that the chief sources of wealth being agricultural, and the labour being more immobile, than mobile, and not likely to evince great

and sudden inclination towards urban places, and pursuits, the most ought to be made of the situation as it is ; and efforts should be made chiefly to improve the agriculture of the country in all directions. The Government is doing its share, but others have not shown any movement in this direction. Agricultural departments have been initiated, agricultural colleges have been opened, experimental farms have been started, and some agricultural literature, though in a foreign language, has been made available. And in time, it is hoped these factors are likely to tell, but considering the magnitude of the issues involved Government alone has neither the resources, nor the opportunities to grapple with the whole question single-handed. People in general, as well as landholders, magnates, and Native States must come in to share in this labour of love. A great deal must be done before we can say that the lot of the agriculturist has been appreciably and permanently improved. I am not vain enough to attempt to lay down a programme for a century or half a century, but I have ventured to suggest here what strikes me as the immediate urgent steps necessary to be taken

17 I have not said anything here as to settlements, assessments, water-rates and other political-agricultural questions, as they have formed subjects of discussions so often that no useful purpose would be served by repeating the oft repeated arguments.

18. The other sources of national wealth are country's minerals, forests, fisheries and as an adjunct to industries coal, oil and water-power. India is blessed with all these, but they all require development. Some think it is the want of capital that is keeping us back ; others think that it is the want of technical skill that is responsible for slow growth in this direction ; while others are of opinion that it is the policy of the Government that would account for the absence of enthusiasm ; and some are of opinion that it is the policy of the Railways not to help the people in the matter. I, however, think that though all the above may share the blame, the real difficulty is the absence of the business man, equipped with business experience, armed with the power of organisation, and commanding credit and respect of his countrymen. While improved agriculture should be the first concern of our educated aristocrats, mining, forestry, fishery and the like

should be the concern of the business people imbued with modern spirit and modern knowledge of organisation.

19. Already coal mining is finding employment for 1,161,000 people, and in consequence of improved mining methods the output per head has grown from 89 tons in 1904 to 104 tons in 1910, but even this is a low degree of efficiency if tested by European standard. The total output of coal has been 12½ million tons in 1910 valued at about 370 lacs of rupees ; and gold, which comes next, accounts for 330 lacs of rupees ; petroleum, raised chiefly from Burma and Assam, was valued at 126 lacs, manganese at 130 lacs, and salt at about 78 lacs of rupees. These figures have been quoted to illustrate the possibilities of mining in the country and thereby increasing the wealth of the people. There are some ugly features about this mining business, and more especially in the case of gold and petroleum, as the country receives only a small share in the nature of royalty or price ; and the main portion of the profits leaves the country. The policy of the Government and of the States with regard to the granting of licenses to the outsiders can be modified only, when there is sufficient earnestness shown on behalf of the Capitalists to undertake the mining of the country into their own hands. But this is an industry requiring comparatively fewer complications than what we call manufactures, and on the principle that all wise movements should be on the line of least resistance, mining should have earlier attention than the manufactures, and if wildcat schemes are not only floated but only should schemes after useful and thorough enquiry, as the famous Tatas have done in the case of their Iron and Steel concern, it may be fully presumed that the result will prove more than encouraging, and a source of wealth will be opened up to us, which, in due course, is bound to tell favourably on the manufactures of the country, both mechanical and chemical, and also on artistic and plain arts of life.

20. Next to agriculture and mining, forests and fisheries should receive our attention. Forests of the country give to the present generation a treasure which nature has taken centuries to accumulate. In the case of India unfortunately forest area is by no means so large as in some other countries, but it is decent enough to receive attention. Excepting a small area of about

77,000 square miles, owned by private individuals, the rest of forest area is owned by the State or the Native States ; which own, at a rough calculation, about 240,000 and 54,000 square miles respectively. Several Native States and the Government of India have now a system of working out these forests, and are raising a fair amount of annual net revenue. What we are concerned with here, is the small attention hitherto paid to the industries, arising out of forest produce, like resin, turpentine, wood-pulp and the like. Under existing conditions one could not be very sanguine about these industries arising out of forest produce, but surely much could be done in this direction, if only the Forest Department took the leading Industrial people of the country into its confidence. There is another aspect of forestry, and that is the cultivation of fresh and more valuable trees, which also should be attended to, to gradually improve the value of the Forests.

21. In some countries, fisheries, both river and sea, find employment to a large number of people, but in India the fish industry is so insignificant that it finds no mention in official reports. Water is the nursery of nature, where nature breeds very profusely and produces a variety of fish, valuable alike for human food, for fertilising the land, and for affording openings for several industries. This is one of those industries, where small capital and small skill and method, reward the people with large results. We should consider this industry seriously as it will help in invigorating the people, if their food of rice and vegetables is supplemented by a fish fare, and as it is a gift of nature, to be had for the trouble of taking it, it must in the long run tell in favour of the wealth of the people also, and I recommend that those who live in the neighbourhood of fish supply may organise fish industry and fish cultivation.

Manufactures.

22. Now let us go a step further, and consider for a while the Arts and Industries of the country. The arts and manufactures of India, as at present practised, are separable into two sections namely those done by hand and those done by steam power. The handicrafts, in spite of the progress of steam power industries, are still the most important, and afford considerable

employment over the whole country While steam power factories are reported to find employment for 7,39,222 persons, the handicrafts are said to account for several millions distributed into 11 groups in the census of 1901 as follows :—

Order.	Persons supported in thousands			
Food, drink, and stimulants	16,759
Light, firing and forage	1,461
Buildings	1,580
Vehicles and vessels	132
Supplementary requirements	.	.	.	1,232
Textile fabrics and dress	11,214
Metals and precious stones	3,711
Glass, earthen and stoneware	2,143
Wood, cane, leaves, &c	3,790
Drugs, gum, dyes, &c.	456
Leather, &c	3,242

Handicrafts.

23. Therefore the care of the Government and of the patriots is required not only for the mill hands, but also for the other large population that still subsists by handicrafts, and will continue to do so for centuries to come These handicrafts are in most cases at present learnt and practised under circumstances which are very unfavourable to improvement, the natural result of which is that some of the artisans are being pushed to the wall with very little chance of recovery, as, their production, in these days, have to be compared in excellence or price with the imported machine-made articles, and it is a question whether the State and the people should view this decline with folded hands, and unconcerned attitude, or should try their best to rescue the dying industries from death, and so to place them that they may be able, with improved instruction, with better tools, with division of labour, and with organisations for marketing, to have another and permanent lease of life.

Chief Handicrafts.

24. Some of the handicrafts, which may still be saved from destruction and may be improved by assistance, in one or more ways above described, may be mentioned here. The list is by no means exhaustive, and others will readily suggest themselves to those who take interest in the matter.

1. Lac and Lac works.
2. Varnishes
3. Vegetable Oils
4. Oil Cloth.
5. Essential Oils and Perfumery
6. Vegetable Dyes
7. Hide, Skin and Leather manufactures in general; Boot and Shoe manufacture in particular.
8. Horn and Bristle industries.
9. Handloom Industry, (cotton, silk and wool).
10. Artistic manufactures of cotton, silk and wool, such as gold brocades, silk brocades, gulbadans and muslins, printed cloth.
11. Carpet weaving
12. Shawls and Pashminas.
13. Embroidery
14. Woodwork and wood-carving
15. Gold and silver smithies.
16. Brass and copperwares.

Power Industries

25. Passing on now to Power Industries, by far the most important of the modern Industries of India are cotton and jute, which have made great progress in recent years. Of the two.

cotton as you know is mainly in the hands of Indians, and jute in the hands of Europeans. The cotton industry is principally carried on in the Bombay Presidency though a few Mills, both spinning and weaving, have been started in other Provinces and Native States, but the Jute industry has, so far, an exclusive home in Bengal. The Jute industry has much less competition to face in India, or as a matter of fact in the world, than cotton industry, which is exposed to the risks of competition, unfavourable circumstances, and adverse Government policy. Cotton Industry has, therefore, loomed much larger in public utterances than jute. But to those who look forward to an Industrial India, jute is as important a matter of concern as cotton; as a matter of fact, in one sense, it is more.

Jute Mills.

26. Out of the 38 Jute Mills, comprising 33,000 looms, and 6,83,000 spindles so far as my information goes, not a single one of them is managed outside or inside by any Indian. To the total paid up capital of 76 million pounds and debenture capital of nearly four crores of rupees it will be very interesting to know how much Indians have contributed. One might ask, is the blame in this case due to any Governmental policy, or to lack of enterprise on our side, or as some one is said to have remarked recently, it is due to physical and moral inaptitude of the Indian to manage a concern like a Jute Mill. Here is food for reflection for all of us, who are here to advance the cause of Indian Industries.

Cotton Industry

Let us now turn to the Cotton industry.

27. There were at the end of 1910, 226 Cotton Mills in India, containing 79,000 looms and about 6 millions of spindles, giving employment to about 2,17,000 people. Being the largest Indian Modern Industry it deserves more than a passing notice.

From statistical returns it appears that Indian Mills produced 2,309 million pounds of cloth and 5,770 million pounds of yarn in the year 1910, and imported about 29 million pounds worth of yarn and cotton manufactures, and also consumed its handloom production, which is by no means a negligible quantity.

It is often urged that the countervailing duties, imposed in the interests of Lancashire, and the recent factory laws, also passed at the bidding of the cotton-opolis of England, are working against the development of this industry and are intended to keep the industry down, as far as possible, by artificial means, the natural causes also being by no means very favourable. Even the apologists for Government find it hard to refute the reasonable and justness of the charge so far as these duties are concerned, but they plead that India suffers no disadvantage as there is an excise duty of a similar amount on imported articles. There is hardly any hope of the repeal of these duties, until and unless the Government of India is granted what is termed fiscal autonomy. For fear of treading on the Political, and in this Conference, the forbidden ground, I do not propose to discuss the fiscal relations of India and England at length, but one remark may be hazarded, that if the fiscal relations of two countries are not adjusted on a fairer basis, there may be trouble, when the people advance in the knowledge of economic history and doings of civilised nations. The economic history of all the civilised countries, including England itself, is writ large in the word Protection and we are denied that in the face of such well-informed opinion as that of the ex-Viceroy of India.

28. The Cotton Mill Industry being the largest at present and likely to grow, a fuller treatment of the subject is required.

(a) We are not on the same footing with Lancashire in point of supply of cotton. Freights on cotton from United States to Liverpool, would be, and are cheaper, than the freights to India on fine American cotton, and I believe the same would hold true of the Egyptian cotton. Therefore so long as the freights remain against us, *prima facie*, for finer goods, Indian must always depend on countries outside India.

The cultivation of finer stapled cotton, or the invention of machinery to produce finer yarn from present style of cotton, are subjects which should receive our earnest attention, and also everything possible should be done to improve the cotton staple. This is needed, as the trade of China, in Indian and coarse yarn, must decline in the event of Japan and China going in for Mill

Industry to a larger extent than what they have done in the past, of which there are already strong indications

(b) The craft of the handloom weaver is also declining. It requires propping up by better looms, and a well-organised co-operative movement, to back him in the supply of raw materials, in marketing his productions, and supplying him with better auxiliary machinery, or auxiliary workshops, to finish his goods. If the weaver ceases to be the customer of the Mills for coarse yarn which he has been weaving so far, more looms must go up to keep the spindles busy, and more power looms would require more cotton of the better type. This also furnishes a strong plea for immediate efforts to be made to improve the quality of cotton, and to improve the lot of handloom weavers.

(c) Further, Lancashire is said to possess an ideal climate for both cotton spinning and weaving. Bombay, Ahmedabad and Cawnpore have not yet made any such claim, and therefore the cotton industry is going on ahead, at almost all places, indiscriminately. Whether this policy is wise or not when it is viewed from this standpoint, it is beyond my power to determine, but this brings us back to the consideration of the question of hand spinning and weaving and power spinning and weaving and their comparative merits. If Lancashire's claim to *ideality* of climate is not based on cotton weaving by whatsoever system but by means of machinery only, made and initiated in that District, it behoves us to pay some attention again to the improvements of hand-weaving and to the consideration of the production of machinery suitable to our cotton and to our climates. The present cotton of India, in certain hands, and in certain localities Dacca, Aruni, Chanderi, Kotah, Rohtak and Banares produces marvellous results in fineness of yarn as compared with the production of the power spindle. Therefore the final word, as to the suitability of climate, and the inventiveness of man, has not yet been said, and India, if she desires to enjoy a respectable place as a producer of cotton goods, must pay attention to the production of cotton as well as to the production of machinery, both hand and power in addition to fighting fiscal battles.

(d) Again, compared with Lancashire we have to face other disadvantages, (i) the primary cost of machinery and the Mills in

India and higher, (ii) the sizes of the Mills are smaller, (iii) the efficiency of labour is inferior, (iv) the rate of interest is higher, (v) the cost of stores, sundries and accessories is higher and (vi) the efficiency of the onlooker is lower but his wages are greater. Now that the industry has made a fair advance, it is worth our while to direct our attention to these auxiliary matters as well, in order to lower the cost of production, and to be able to manufacture better articles than what we have been able to produce hitherto

(e) England has thought it worth its while to combine to grow cotton for its Mills, to start Technical institutes and Laboratories, and to improve the knowledge and skill of the people. Various associations have been started to look after their various interests. It behoves us, therefore, all the more, to look into these matters more closely in all respects in order to assure further, steady and successful growth of the Industry and to guard it from dangers arising out of changing of habits in the people, and their ideal, and ideas as to what should they wear

(f) Even if we successfully attempted all these, the fact cannot be ignored that Lancashire and other competitors of hers from Japan or America or Europe will continue to supply India with cotton goods. With our 79,000 looms we cannot supply Indians with more than 11oz of cloth per head per year, and we buy 1 lb 11oz from Lancashire, and already we weave at the handlooms a considerable quantity. With all this India is not properly clothed; and the demand for clothing will continue to increase with the facility of obtaining it, and with the advance of civilisation. Some of us are old enough to realize that Indians, now, consume in towns and large sized villages, in some parts of India, ten times the quantity of cloth that used to be consumed less than half a century ago.

What quantity will eventually suffice to clothe the vast and growing population of India, it will be vain to guess; the population of India has increased by 50 millions in the last thirty years, and what would be the further increase in the population, it is also difficult to foresee.

In view of this enormous increase in demand, and in view of the vast amount of capital and labour required, to work up even

a portion of our requirements, Lancashire need fear no competition from India, therefore I fervently hope she would of her own accord join hands with us to remove the disabilities under which our Industry labours, whereby she will earn our gratitude, will make us its willing customers, and establish a good name for England

(g) Before finishing my remarks on the cotton industry, I may be permitted to draw the attention of all concerned to the after processes of weaving, such as bleaching, printing and finishing

In this connection again it is worth our while to consider whether home or hand industry as an auxiliary to the Mill Industry should not be introduced, revived and improved.

(h) The magnitude of the cotton industry, both hand and power as it exists at present, coupled with the fact that it is likely to grow faster than other industries, impels us to pay special attention to all the possible ways and means for its improvement. I would, therefore, humbly suggest the formation of an Association with headquarters at Delhi the membership of which should be open to all the Mills in Northern India; and I would further suggest the formation of one or more associations of the people interested in growing, in buying and in selling cotton. I would also suggest the formation of one or more Institutes of Mechanical Engineers, and carding and spinning masters, which associations should try to improve the industry from the special points of view, in their special knowledge, and forming their special concern. I may also venture to hope that one or more banks will be specially organised or one or more of the existing ones will specialise in financing cotton trade, cotton industry, export of cotton and import of cotton goods.

(i) There are two questions still left over in connection with the cotton industry which will be treated in their proper places. In connection with other matters, I will hereafter refer to the transport of cotton and cotton goods by railway, and the arrangements for the furnishing of Technical knowledge to the people. The trading in piece goods as in other goods should be

viewed in the light of my remarks on commerce and trade which follow in due course.

Other main Industries.

29 Gentlemen, a few remarks only will suffice with reference to other main industries.

Other main but smaller Industries, which have so far been tapped in this country are paper making, beer brewing, and wool-weaving. Steam power has also been applied to flour milling, oil crushing, cotton ginning, printing and railway works with more or less indifferent success. Glass making and Indigo factories were started but they have almost all disappeared. Of these, Woolen Mills, Brewries and Paper Mills are the outcome mainly of European capital and enterprise, and the others (excepting Railway workshops) mainly of Indian capital. Indifferent success in these concerns is due to various causes; in some cases, for example in the case of ginning and flour milling, it is due to the overbuilding of factories and building of factories in unsuitable localities. In case of paper making it is said that cheap wood-pulp has adversely affected the industry; in Indigo, the discovery of synthetic indigo has killed the natural plant; and glass making, it is alleged, was attempted without sufficient skill and sufficient knowledge of conditions, under which it thrives. The Industrial Conference lately passed a resolution asking people to study the causes that have led to failure, with a view I trust, of improving the chances of further efforts. I have mentioned here some of the causes which have hitherto effected adversely several attempts that have been made, but one cause which has, I believe, more than any other, contributed to the decay and death of the new budding industries has been the absence of knowledge of business ways in the promoters of these schemes.

In addition to above, want of capital and employment of inexperienced staff, will also account for several cases of failure

think a careful enquiry should be made into the causes but not by the people in a haphazard way, but by an experienced man sent out by the Industrial Conference

Causes of Decay and Growth

30 One word with reference to the decay of our ancient Industries and to the causes of the Industrial growth of other nations and countries may be permitted.

The story of muslins, brocades, carpets, iron and steel manufactures and goods of similar nature, manufactured in Ancient India, which drew the attention of the world, has so often been told that it does not require to be repeated. But we must remember that their death was not due mainly and solely to Tariff wall, but to causes which are even now potent in making and unmaking Industries. It is only by a grasp of the true situation, and by adapting ourselves to new conditions, that we can advance Industries in this land. These conditions may be summarised as under —

- 1 Discoveries of Science, which were always utilised in practice
- 2 Application of machinery, which was invented, made and used as needs arose.
3. Utilisation of coal and water or other powers of nature, to reduce the cost of production by reducing the labour bill.
- 4 Factory system, Associated efforts.
- 5 Easy and cheap transport, by land and water.
- 6 Commercial and Industrial enterprise throughout the peoples of the country.
- 7 Division of labour, which helped specialisation
8. Cheap and sufficient capital.
- 9 Favourable and helpful attitude of Governments, at home and in International relations.

- 10 Adaptable social and religious systems, to help in the readjustment of new factors.
- 11 Co-operation of women folk, who in the East act, sometime, as a brake on the wheel
- 12 Competition and avoidance of competition as required by the dictates of prudence and wisdom.
13. Combinations
14. Utilisation of By-products
15. World Markets
- 16 Literary assistance.
- 17 System of Insurance against the risks of fire, water and earthquakes.
- 18 Simultaneous growth in all directions, and
19. Latterly Technical Education

Gentlemen, it will be impossible to attempt a complete thesis on these important subjects, but they have to be fully understood, both in theory and practice before we may assume that we have fully grasped the situation. We want Industries, but before we could have them, we have to equip ourselves with all that is required to become a successful Industrial people, and it is with this desire that I have taken up your time in enumerating certain preliminaries that are essential in an Industrial age, and I hope the younger generation will take them into their best consideration.

31 Gentlemen, my predecessors in this Chair and others, from time to time, have laid special stress on the four requisites of production namely. (i) Capital, (ii) Skill, (iii) Labour and (iv) Markets, and my immediate predecessor has further brought in the (v) necessity of Social Reform into discussion, and has also advocated (vi) Fiscal Autonomy as a necessary condition of Industrial improvement. It will serve no useful purpose to re-assert the arguments in support of their position, as I am generally in

accord with most of what they have said, and those who have had opportunities to study closely the difficulties that are retarding the Industrial advance of the country feel that these, amongst others, are the unfavourable factors that we have not only to contend against but eventually to overcome. The workers and thinkers of India, in this domain, are coming into a unanimity of opinion which establishes the strength of their position. I will however offer a few remarks in passing on these subjects in the order in which they have been mentioned, and I trust they will receive your indulgent consideration and may arrest the attention of others.

Capital

32. Let us take capital first. Capital and plentiful capital is a great necessity. It has to be collected and made available. *Whence* and *how* are the questions with which we are concerned. It has been suggested, that with Government aid, we ought to be able to coax foreign capital, it has also been said that India possesses immense hidden treasures which ought to be, now made available for the economic development of the country. We have, as a matter of fact, to tap both the sources, with whatever results luck may have in store for us, and we have also to create capital by savings, avoidance of waste, and to turn our earnings into interest, dividend and profit earning channels. All the three sources combined, will hardly suffice for the immense amount of capital required for the development of the country, and we must be prepared to exercise some self-denial for some time at least in the way of reducing our jewellery bill, and bill for fine clothing, by giving fewer marriage feasts, avoiding too massive buildings, and the luxury of English education for our First Arts-failed boys. We cannot have capital, if we do not save. We cannot have capital if we do not make small capitals pay. We cannot reckon on large sums of money being available as capital if we do not organise. Therefore we must save, invest and organise before we could have a capital Fund to back our industries.

33. You are aware, gentlemen, that already foreign capital is playing a part in the economic situation of India. Jute Industry, Tea, Coffee and Tobacco industries, partly Indian Railways, Indian Canals, partly Indian coal and Cotton Industries, almost

the whole of Indian petroleum, and almost the whole of our foreign commerce, are financed by foreign capital and it is now realised that we are paying too heavy a price for it. This happens in two ways. Excepting the case of canals, where we pay only interest on borrowed funds, and railways, where we keep back a share of earnings all the earnings, of capital in other cases belong to the Foreign capitalists, and in all cases, including railways and canals, the best paying and most honourable positions are also reserved for the outsider. It has been said by my predecessors that we do not want any more foreign capital with such onerous conditions. The best terms, they think, that should be offered now are a fair return by way of dividends, or interest, and a share in the best positions not exceeding half. This could be secured, so far as the Government monopolies are concerned, by throwing open half of the best appointments, from top to bottom, to Indians, who will, I hope, take no time to qualify themselves; for these honourable and responsible positions, if these appointments were once made available. All tall talk about want of stamina, want of independence and pluck, is a pure invention, without any real foundation; and all these imagined disqualifications will disappear as darkness does before light. Foreign capital at present flows into these monopoly channels and into exclusive concerns, whether it would flow into pure Indian or mixed concerns, is mainly a question of credit in the foreign markets, and the best way to achieve the object, in my humble opinion would be to introduce large and well-considered schemes with mixed boards. But schemes which are State-aided or aided-by-Native States or local bodies, will have a better chance. Hydro-Electric Schemes, Tramways, Gas Companies, Water-works and the like, which easily lend themselves to this condition; will command easy underwriting at the European exchanges. This brings us to the consideration of a large fiscal question, as to whether the Local Governments, Native States, and Local Bodies should have independent powers of borrowing, and initiation of schemes; or should they always go to one Banker, the Government of India. This is a large question and involves a variety of considerations, which must be left over for others to tackle.

One other way to coax foreign capital will be through the Exchange Banks on existing securities, which can be well tested and examined. The third way to induce foreign capital is by

means of commerce, which will receive some attention in this address at a later stage. What we want is the *method* of inducing foreign capital into our country and not merely the opinion that foreign capital should not be scorned. As a matter of fact, so far as my knowledge goes even the boy-cotters did not advocate that policy.

Home Capital

34 While on the subject of Capital, a few more words are needed on Indian capital. Foreign capital being any case a problematical question, home resources are the surest to avail of, and these must be multiplied as fast as one can do it. The organisation of Banks and the flotation of Joint Stock Companies, has tempted some capital to find its way into the domain of industries. At present these are only test measures, and the future influx of capital through these channels, will depend on the successful engineering or otherwise of those concerns. As the success of a new business depends on a variety of circumstances, it is not always easy to pilot every scheme through, but nothing succeeds like success, and therefore it behoves us, the pioneers of Industries, to go slowly along, and to watch carefully every step forward that we may have to take. The failures of the last few years, in the sphere of Joint Stock Companies, should be very carefully studied, and the true causes of failure accurately ascertained and measured, and they should be given sufficient publicity to, so that new comers may avoid the mistakes that were perhaps inevitable for the first venturers. I have not time enough at my disposal to probe the enquiry any further than merely alluding to it in passing, as I have done already but the subject is well worthy of the attention of the Conference. I will again draw special attention to one cause amongst others, and that is the inexperience of topmen in business, and the lack of sufficient supply of men who will assist the topmen by hard study, by careful observation, and by ready adaptation. I hope this phase will soon pass away, and past experience will lend knowledge and strength to the new comers. The Government, the native rulers, the public bodies, and the patriotically inclined gentlemen could do a lot in helping the cause forward by publishing in advance well-considered information on any new scheme put forward, and if the

commercial department of the Government of India leave off its traditional shyness, and advise and seek advice and communicate the same to the new venturers it might do a real yeoman's service. This much about the direct accumulation of capital.

Banking

35 Now let us turn to indirect sources The source at present available is Banking This has been well launched, but it must be now very carefully watched by all interested in it We should not multiply the number of Banks, and thereby produce weaklings, we must stick for sometime at least to near about the number already floated, and our first effort should be to strengthen them and enable them to fulfil their mission Their mission is two fold. First to attract small owners of capital to part with it for safe custody, easy return and some profits, and, secondly to help forward all honest enterprises in the domain of commerce and industry. Any mistake made on either side might have disastrous effects, and put the pendulum back for a long time It behoves, therefore, all of us interested in the economic welfare of the country to establish a sound and solid banking system in the land With the number of Banks already started, I would propose the formation of a Banking Association, without any loss of time, and would urge thereby the discussion from time to time of questions vital to the existence, continuance, permanence and prosperity of the Banks. This Association we require very badly, and the sooner it is started the best for all concerned

36. You are aware that the present Joint Stock Banking of India is divisible into Exchange Banks with foreign headquarters; the three Presidency Banks governed by special laws; and the Discount and Deposit Banks, as they may be called, under European and Indian Management. The first named Banks, excepting perhaps in Presidency towns, are mostly concerned with financing commerce; the Presidency Banks mostly deal in discount, but the other deal with internal exchange, discount, money lending and what not. The Co-operative Credit Banks, I am sure, are doing immense service to the agriculturists, but at present are small; though they are growing institutions and have possibilities of much growth. Banking like irrigation, and capital

like water, are required everywhere. There is more demand than the supply can cope with, and there is temptation to serve the first comer. I would therefore venture a suggestion, and that is the specialisation of the Banks on their investments side agriculture, trade and commerce, special trades and industries, like cotton and jute, real state, and the small borrower, all must have access to Banks, but to special ones only. The advantages of this division will be many, the interests paid on deposits will depend on the rate of interests likely to be earned from the special branch of business, for which the Bank will cater, the safety of investment will be insured, because that will form the special knowledge of the Managers, and the Directors, and all economic activities will receive help in proportion to their merits, and undue and untimely competition, already visible, will be avoided. It is not only in the reduction of profits that competition manifests itself, but also in making unsafe investments.

37 While on the subject of Banking, a very useful system of Banks could be devised by the help of Native States, somewhat on the lines of Pre-idency Banks and Discount Banks, combined, but this subject can be usefully dealt with only when the Political Agent turns his attention to the economic side of the development of the States, and is spared somewhat from Ceremonial duties—from duties of guarding the morale of their wards, and from dealing fair between contending parties.

So far I have dealt with the main indirect method of collecting home capital.

Insurance

38 The other indirect source of collecting capital, in all civilised countries, is the development of Insurance in all departments of human life and activities. In India the first Life Office was started with the hobby of Government securities, and that idea has got hold of the brain of many people, officials and non-officials alike. The history of Insurance Offices of all the world, and a glance over the lists of investments of even leading offices of England establishes my contention. I would, therefore, unhesitatingly draw the attention of my countrymen to this branch of financing institutions, and would like them at once to combine

into an Association, to develop Insurance on healthy lines, covering all departments of risks. The country is vast, the population is large, the ills and risks to which it is subject are more numerous than anywhere else, therefore it stands in greater need of real protection by insurance, than the population of any other country. Afford protection and real protection to all, and indirectly bring together small sums of money to swell into much. This will form a rich source for collecting capital

Digression

39. I may be permitted a short digression. Our Government is really a *Ma-bap* Government. It acts like the aged couple who in their dotage have to deal with a weakling child. The little one should be protected from all harm. So our Government, without any cause or call enacts factory laws, Boiler Acts, Insurance Laws, and what not. We, as children, need not quarrel with our over-anxious parents, but we must try to get strong so that this over-anxiety on the part of our *Ma-bap* Government may be over. This is all that I think should be hazarded on this question of legislative interference, where no interference is called for.

This leads us to another aspect of the question, namely, the production of stuffs so largely used by Government departments by means of *pioneer* industries which may after a while be transferred to the people on payment of a portion of the money in hard cash and the balance by way of deferred payment debentures. This would, in my humble opinion, be a better way of introducing new Industries in the country than the suggestion that Industries started by foreigners may be repurchased by Indians at a Government valuation. This will not militate against any phase of Free-trade, Free-manufacture and Free-exploitation of India by the people of the whole world.

Village Banks.

40. One word with regard to village Banks or Co-operative Credit Societies, as they are now termed. At present they need urban support, which should be unhesitatingly given by the people living in the towns. This measure will relieve agricultural indebtedness, may relieve real misery in many cases, and it will

directly and indirectly help agriculture, the real source of India's wealth and prosperity. If the village Banks and the village Co-operative Societies are helped in a whole-hearted way, the time may not be far distant when the village Banks may advance and become the tributaries of urban and other Banks. According to official ideas and expert statistics it is the agriculturist who is absorbing the gold that is now flowing in from year to year, and if confidence is established amongst the village folks to entrust their small savings to these Credit Societies, then when they swell beyond the village requirements, they are bound to find an outlet in towns and cities. This again is a source of collecting capital which should not be overlooked.

Other Means of Collecting Capital and "Swadeshi" applied to Capital.

41 In more advanced countries there are other financial institutions, besides Banks and Insurance Companies, and besides Government or local bodies' loans—there are Financial Syndicates and Trusts, Friendly and Building Societies. But here, perhaps, the time is not yet ripe for these. But for one thing we ought to be ready, and that is the capital organization of *Swadeshim*. Every publicist says something about Swadeshi. Everybody likes Swadeshi, if it is honest. The Government alleges its adherence to Swadeshi, if it is Economical and not Political. It has been argued that Swadeshim is an excellent doctrine, if it is applied to *production*, but it is mischievous if it seeks to capture *distribution*. Swadeshim, as capable of affording a permanent protection to indigenous industries, has been poohpoohed, and it has been doubted whether many of us are real Swadeshies. I personally did not join any Swadeshi Propaganda, when it was in its ascendancy, and when an Indian was considered a black sheep if he did not openly profess himself a Swadeshi. The storm has now passed, and a quieter view of the Swadeshi-force has to be taken. Swadeshim or the love of the country on its material or prosperity side, is a force, it is a noble force, and therefore an effective force, but it is split up into small bits, its individual strength being equal to the possible voluntary sacrifice or service that an Indian adult, man or woman, is capable of rendering, without crippling his or her other activities. This then is the force which

may be translated into direct money contributions, with an expectation of only a small return, to form a nucleus of capital for initiating industries, and introducing young men into business careers. It requires organising, but I am fully convinced that it is capable of organisation. Individual contributions may be small, but the cost of collection, management, and distribution may be nil or negligible. This should be attempted by younger hands, under the guidance of older heads. We may thereby tap an artesian stream, an artesian stream of Swadeshism, which will do a lot of good in watering our parching fields.

Skill

42 I presume I have said enough with reference to the first factor of production.

Let me now, gentlemen, turn to the second factor of production. It is technically termed *skill*, but includes a multitude of requirements. In this connection our attention should not be focussed on mere steam power factories, but on all factories, big or small, hand-worked or power worked, which are engaged in the processes of manufacturing useful articles of food, apparel, habitation, enjoyment, transport, and intellectual and physical advancement. We find, by comparison, that both *hand* and *power* productions of India are much inferior to those of Europe, America and Japan in the following respects. They are poorer in design, execution, and finish, and therefore they fetch less value, and are much less appreciated, and they are hardly able to hold a place before similar articles of foreign manufacture. Let free trade be assumed to be justified, let the right of England to dictate terms with regard to exchange of commodities be admitted, and let the better and older organisation and the world-marketing of Europe be accepted as factors against us, but still there is no reason why India should not be enabled by training, to manufacture some of the articles at least, for which she has her own raw materials, for which immediate need for deep scientific knowledge does not exist and for which she can, even with her scanty resources, find the required amount of capital, and lastly, which her own sons, if better trained, could manufacture, and which may have to be consumed in India itself. There is again no reason why India should not

be enabled to produce, for her own use at least, articles, which have not any trade secret behind them, and which can be produced with the use of a set of better tools, and by a little training in handling them. Once again there is no earthly reason, why India should not be in a position to manufacture, in the country, articles which do not require application of chemistry or other practical science, but are produced by mere mechanical processes, provided proper machinery is made available and their handling is taught. Thus there are several avenues where increased skill would arrest decay, improve the standard of production, and introduce new manufactures, akin to existing industries. To produce such articles economically, skill should be made available for all concerned in the manufacture and not for mere worker with hand and for those who supervise.

Who should do this and *how*, these are the two questions to be answered with reference to this subject, and these should be answered before going into the details of arts and industries requiring assistance in this direction?

43 The first party to be considered in this connection is the Government. At the threshold of all demands for technical education, we are invariably met with the stock argument that India lacks initiation, and the Government is asked to do in this country what is not considered the duty of State in other lands. My reply to this is "I beg your pardon." The conception of the functions of the State in these days is very different from what it was in ancient times. The component parts of a State are also now different from what they used to be. The ancient State consisted of the conqueror and the conquered, where the conquered had no voice in the management of affairs. Now even when the State does not consist of the people themselves, the subject races have been generally admitted by all great powers to a share however limited in extent in the Councils of the State, and therefore it is composed of people and the rulers in various degrees of co-operation. A small measure of such co-operation has been graciously vouchsafed to us also. Again, the State Revenues do not consist now merely of taxes raised; but also include the profits of large monopolies, such as Railways and Irrigation in India. The Government everywhere has, for one reason or another which we need not stop here

to enquire, proclaimed itself responsible not only for the *peace* but also for the *prosperity* of the State. The whole consular system and all the present day international treaties bear out this contention. The Indian Government also is therefore responsible not only for a programme of peace, but also for our prosperity. Following the dictation of this well accepted doctrine, it now presents annually to the Houses of Parliament a statement entitled "a statement exhibiting the Moral and Material Progress and condition of India." Therefore it cannot very well disassociate itself from this duty.

44 The next question that arises is as to the extent of prosperity which it is the duty of the State to provide. Does it extend to the provision of subsistence wages only for all its subjects, or does it extend to the provision of palaces for all to live in; and mushrooms and oysters for all to feed upon. A reasonable answer to this enquiry appears to be, that the standard of prosperity of India should not be lower than that of any other country, which is governed by equally civilised and enlightened rulers. I do not mean that it should be equal to that of England and France, because therein we shall have to face the further objection that those countries had a long start in the race, but surely Germany and Japan had no such advantage, before the end of the first half of the last century. Well, we shall have again to face a further objection that the people in these countries have helped themselves irrespective of the efforts put forth by the State to help them. [reply, have we not done so? Which technical school of Agriculture, Forestry, Mining, Engineering, Medical or Law is without its pupils, and without pupils from the best stock of the land? Have we not also contributed our mite to the establishment of Technical Institutions? The latest report of the Peripetatic Committee on Technical Institutions bears witness to this. Practically most of the advanced provinces have already made attempts to found private Technical Institutions, and the Government has also founded some. Apart from this aspect of the discussion which leads us to the conclusion that the people and the State must combine for the advancement of Technical skill of the people, the Government has not taken up the question as a whole yet, though the people have been demanding it for over a quarter of a century, and though there have been held many committees, enquiries and con-

ferences What is really wanted, is a facing of the problem as a whole, and the creation of an organisation or organisations to meet the every day growing and varying wants of the people in this respect General primary education in every province, is in the hands of a Director of Public Instruction A similar officer as an Assistant Director of Public Technical or Handicraft Education, should be appointed in each province, with a similar system of State schools and Aided schools and Private schools open to Departmental inspection The Higher General Education in various provinces is looked after by Universities, composed of Senates, on which are represented members of all faculties with a mingling of high placed officials and magnates of the country. Similar Bodies are required for looking after the Higher Technical Education of each Province or to start with each Presidency The existing universities show a tendency towards becoming Teaching Institutions in the near future The proposed institutions should be teaching institutions from the very start These composite bodies may be constituted in the same way as the Senates were constituted before Lord Curzon's University reforms were introduced. Without such organisations, it is difficult to conceive how this problem can be solved The problem as stated above is changing every day with the change of the ideas, habits, ideals, and ambitions of the people, and so should Technical Education adapt itself from time to time to varying conditions, and this adjustment can only be done by a watchful body as here recommended.

Technical Education.

45 So far we have seen that it is absolutely necessary, for reasons assigned, that Technical education should be advanced, and that the Government and the people should join hands in meeting this urgent demand of the country But there are a few special features of the subject which should not escape a passing notice I have said above that the modern State is responsible both for the Peace and Prosperity of its subjects; and it adds considerably of its duties and responsibilities, when it becomes a monopolist, as the Government of India is in several material aspects. It has the practical monopoly of Forests, Railways, Irrigation, Post and Telegraph Offices, Roads (this latter monopoly it shares with local bodies and States) Mint, Excise,

Stamps, Geological and Archæological Surveys and Public Health. It is also the largest owner of Public Buildings and the largest publisher in India, to mention only the principal monopolies and a few big undertakings. Every employer of labour and especially an exclusive employer has a duty, apart from State considerations, to improve the efficiency of its labour, and to seek out means by which to decrease the cost of production, and to employ people, more and more, who are near at hand. Now, have these Departments so far looked into the matter from the business point of view? The unhesitating reply is 'No'. There are, I would not ignore, Civil Engineering Colleges and a Forest School and Medical Institutions, but even in these departments the colleges are admitted to be inefficient and ill equipped, as we have not found any of their alumni, in the space of a quarter of a century, to have been placed in charge of a *directing* position, or where *highly technical knowledge* is required. In this respect the duty of the Government is quite obvious, and it should not be overlooked any longer. Railways and other technical departments have been in existence for over half a century and it is high time that the Government did its plain duty in this direction.

A Bye Question.

46. Now let us look at the subject from another standpoint. "The Government recently sent out two experts to wander about the country, to enquire about the wants of the employers of labour for technically trained men and to bring technical institutions into closer touch and more practical relations with the employers of labour in India." The scope of their labours was therefore very limited, and it was further limited as the professions included in their enquiry were only :—

1. Civil Engineering.
2. Mechanical Engineering.
3. Electrical Engineering.
4. Textile Manufactures.
5. Mining Engineering.
6. Industrial Chemistry.

and "the inception, organisation or improvement of Industries" was excluded from the scope of their enquiries, though the "Grades of the *Personnel* of the profession was included in the enquiry."

This shows how limited the scope of the enquiry was, and even in this limited sphere of activity we need hardly expect grand results as there is no machinery at present existing to which, regulate, readjust, and duly expand technical education. An organisation of this nature is the first and the most important step towards the realisation of the object. The general recommendations of the Committee however are as follows

"(1) The existing system of training for the Civil Engineering profession in Central Colleges is the most suitable one for the requirements of India

(2) Apprenticeships for one year on practical work in the Public Works Department should be granted, if possible, to every student passing out of a Civil Engineering College

(3) There is practically no opening at present for the employment of high grade mechanical or electrical engineers whose education is mostly of a theoretical character

(4) There is a very large opening for the employment of men in mechanical and electrical engineering, who after training in a properly equipped Institute, are willing to gain their practical experience by apprenticeship on a living wage, work with their hands, and observe factory hours and rules. This employment is open to Indians of every caste or creed, grade of social position or education, provided these conditions are observed, and the height to which they can rise depends on their individual characteristics

(5) The best method of training men in mechanical and electrical engineering to meet the existing demand is by a course at a well equipped Institute, followed by an apprenticeship in works. Institutes should not grant any certificates till this apprenticeship is satisfactorily completed.

(6) The education given in the Institute should be essentially practical be capable of being applied commercially, and not of such a high scientific character as is often considered necessary in the West

(7) Large mechanical and electrical Institutes are, at present, only necessary in those provinces in which industrial development is well advanced. Minor Institutes should be properly endowed, equipped with adequate staff and apparatus, and placed under proper control as regards their courses and certificates

(8) The staff of all Institutes should be carefully selected, and consist of men with the necessary theoretical attainments and extensive practical experience. To keep in touch with the various industries, the staff should be permitted to take up consulting and advisory works as opportunity offers

(9). The scheme recommended for technical education for the mining industry is detailed in paragraph 203

(10) Apprenticeships after a course at an Institute as detailed in recommendations 4 and 5 are equally necessary for technical education in the textile industry, in which the courses in spinning and weaving should be separate ones.

(11) Afternoon classes for textile jobbers and mistries should, if possible, be instituted in suitable centres if a satisfactory demand exists, to practical demonstrations in the vernacular on the theoretical side of their work

(12). Arrangements should be made for the permanent co-ordination of the relations between institutions and employers of labour by the appointment of a controlling officer, and the establishment of an employment bureau "

As in duty bound and in our own interest we must endorse these recommendations, and draw special attention to the last (para 12) and strongly urge the necessity of the immediate creation of the appointment, recommended to be made and the establishment of an employment bureau.

47. The report referred to above raises several other very important questions, with regard to existing institutions and their equipment with regard to the classes of people that at present avail themselves of the benefits of Technical education, and with regard to the opinion of employers generally as to their fitness for work. These experts have also discussed the greater suitability of the inhabitants of certain provinces for special classes of work; they have reviewed the effects of the present methods of recruitment of technical scholarships tenable abroad. The reading of their report affords much food for reflection, but it is not possible to review the report at any length here but earnest attention of all our public men is invited to its consideration.

It is increasingly obvious in politics, as well as in matters of technical education, and another walks of our public activities that specialists must now complement and supplement the efforts of the Publicists and that a division of labour in our public men is now very urgently called for. It is now impossible for any one to be a leader in politics, social reform, business, Agricultural and Technical education at the same time, and the sooner we realise this the better for our prosperity, and the solution of many pending questions which hang on for want of expert handling will be discovered. Whatever may be permissible in other walks of life experts in technical education are much needed.

48. I do not propose to make many more references to this report but with reference to one matter one must offer a few remarks

I am referring to Technical Education as applied to Railway administration. This part of the report ought to be very carefully studied by those who are interested in the practical solution of this much vexed and important question, and they should take action or make representations in the light of practical criticism. The report frankly admits the importance of this branch of the subject but does not deal with the whole question exhaustively, and the enquiry stops short at the supply of Permanent Way Inspectors. The report says, "The Railways in India require a separate chapter, being by far the largest employers of technically trained Indian labour. They present, however, several unique

features They almost universally wish to employ and train the relations of their employees, they have their own system of Railway schools, and in many instances have systems of technical education of their own."

The importance of the subject is admitted but the recommendations, so far as the Indians are concerned, are not whole-hearted, but a beginning has to be made and this ought to receive special attention from the Press, the public, and our representatives in the Council. We must thoroughly agitate for this; and similar remarks apply to those other departments of the Indian Government where technical knowledge is required.

Labour

Let us turn to Labour itself now, as distinguished from skilled labour.

The Time-honored impression about the labour supply in India has been that it is plentiful and therefore cheap; this impression has also been taken from their cheap living and abstemious habits. But this impression has now been entirely upset. It is now admitted that in India labour is very scarce, inefficient, and therefore very costly. The difficulty produced by the rise in wages is being felt in all walks of life and activity; particularly as it is not accompanied with a corresponding rise in efficiency. The Hon'ble Mr. Dadabhoy thinks (a) that free and compulsory Primary education will instil healthy sense of duty and ambition, (b) that the supply can be improved by stopping oversea emigration, (c) that free movement of labour should be encouraged by repeal of laws such as Assam Labour Law, and finally he recommends to get over the difficulty by (d) the free introduction of labour-saving appliances.

49 Labour saving appliances and greater use of steam and water and electric power, if fairly well developed, may reduce the labour bill, but the problem is by no means solved if we have any dreams of an Industrial India. Industrial India wants a very large quantity of labour and very *efficient* and *conscientious* labour. There is no doubt that the material is in the country, and it seems it will be inexhaustible for a long time to come. I always

believed that that was the greatest economic asset of India; but when the greatest economic asset is put in the market it turns out to be immobile, indifferent, and therefore of almost no value. This is a very serious question, and deserves the attention of all employers of labour. To my mind the greatest reason for the deterioration of labour in the country is the example of the onlooker, both European and Indian, who does not put his whole heart into his work and who does not set a good example. A European employee, on Railways for example, is a little likely to take off his coat as an Indian. It is not due to his incapacity or indolence, but is due to fashion, and it is considered beneath one's dignity in this country to do so. A Mem Sahib perhaps out here does not do any dusting of her house in the fashion she does in England, because at one time she believed in the cheapness of labour and possibly in maintaining her dignity. Her imitator, Indian lady, dresses in silk, and does not put her hand to any household work. Large works of Government are constructed with an haphazard watching of labour and the tone of labour has become deteriorated by the bad example of the men employed to supervise it. Until the Government changes its standard of labour and its high placed employees become more Europeanised in this respect than Orientalised, the difficulty will remain. Railways especially have a larger scale of establishment than is necessary, and as the Railway is now almost everywhere, the tone of labour is everywhere being affected in efficiency thereby. I have often questioned an Indian employee of Government on the subject, and have invariably received the same answer that "*Uffisar log kam nahin karte*" I hope I will not be dragged on coals for this, but this is the far-reaching reason that accounts for the deterioration of labour.

50. Next to consider is the efficiency of labour. Labour in India is quite inefficient and so are we quite impractical. Are we not told every day, and do we not realise in our lives every day that we are the best of us, less practical, than the people of Europe and America? Do not then the two statements amount to the same thing told twice over? Is not this the labour-translation, of what we have been often told and we have ourselves realised that *introspection* rather than *observation* has been our habit? Exclusiveness and not assimilation has been our life-principle. If the

view thus expressed be correct, then it behoves us to go deeper into this question than we have hitherto done and the efficiency of labour and conscientiousness of labour, whether it is educated or non-educated, whether it is urban or rural, whether high or low, should form the subject of much serious enquiry, much thoughtful readjustment of ideas and habits, and great efforts should be made to improve it. The easiest start in this connection is the setting of an example by those who are in a position to do so. This to my mind is at the bottom of all indifference, want of skill and attention, that we find in the labour of India, and one cannot lay sufficient stress on this very important aspect of the problem. I pass on now to the question of quantity of supply, as distinguished from quality.

51 The insufficiency of supply is in some cases due to want of information in the rural districts of the demands of industries and towns, and when labour does want to shift they don't know whether to go to Patna or to Dacca, for employment, and they have not even the means of finding the Railway fare, for their intended journey—nor the means to find food for a number of days and to leave sufficient for their dependents behind. They do not know where to turn to. The village is so constituted that each unit of labour has a duty assigned to it, and has an assurance of life's wherewithal, if everything goes right at the harvest time. Now to break off from this chain requires courage, sufficient knowledge, certainty of finding employment, as well as the suitability of employment, and also employment for a certain number of village companions, to stand or fall together, and to be the support of each other in times of distress and affliction. If means are found to overcome these and similar other difficulties and the capitalist employs proper agencies for recruitment of labour, and budgets for recruitment expenses of labour in his prospectus, things are likely to improve, so far as supply is concerned. It is only a question of measures, wise measures.

Coming now to the subject of marketing

52. It has been suggested that the well-known methods of marketing of goods such as holding of Exhibitions and fairs, and of advertising are badly needed to help the enterprising and the

struggling manufacturer on I fully endorse this view, but this brings us to the consideration of a very vast and important subject, which has hitherto received very inadequate attention at our hands. I am alluding to Commerce

Commerce

53. The Theory and Practice of modern Commerce is not the subject to which I am alluding, but the handling of the commerce by Indians themselves is the point at issue. We have a very brief history of Indian commerce; we have been told that we sent out goods overland to the countries of the West from time immemorial, and we also know what articles were exported. We have also been told recently, on good authority, that to the East of India we sent out certain ships of our own manufacture and ownership, which are mentioned in ancient literature, and the pictures of which are to be traced on Indian monuments. This may be very interesting, and very inspiring, but had we ever any respectable oversea or overland trade which we handled ourselves. Vasco de Gama rounded the Cape of Good Hope in 1498, and we were discussing late in the seventies and eighties of the 19th century, whether we could take a sea voyage without being eternally and everlastingly damned here and hereafter. I hope we have settled and ended this question forever now, though even now one hears foolish talk sometimes of chartering a Hindu excursion-ship, to maintain and preserve our prejudices. I am aware, that against my wholesale condemnation of our attitude towards foreign travel and Commerce, I will be appointed out at once the example of Hindu Shikarpuries and Sindees, and the more recent example of Borahs and other Mohammedan castes, so far as Asiatic trade of modern days is concerned. But this is so insignificant in volume, that even mention of this is not made in official Records and Returns. The old-day Shikarpuries were not carrying on much International commerce, but were mere adventurers into the lands of less adventurous people of Central Asia, and by residence and trade there, for some years, brought riches to their land. It may be very commendable but is not quite to the point.

54. I will not attempt here an historical sketch of overland trade of India in early or mediæval times as I am not concerned so

much with the goods ; as with the agency which carried on the commerce Commerce there is already enough between other countries and India ; as a matter of fact empires have been lost and won in consequence , Countries and Continents have been discovered , and Countries have risen and fallen in search of our commerce, but we have not moved.

55 The present commerce of India is chiefly with countries lying to the West, though Japan, China and Java lying to the East are also coming in. The volume of our seaborne Foreign Trade including treasure in the year 1911 touched the total figure of $260\frac{1}{2}$ millions sterling, divided into $155\frac{1}{2}$ millions and 145 millions of exports and imports respectively in addition to some Frontier trade. Who handled all this ? From loading into the Railway trucks, to the place of consumption, in the case of exports and from the place of manufacture to almost our doors, in the case of imports, we do not deal with it. We buy and sell in our towns and our villages, and we have nothing practically to do with it beyond our noses.

56. The fact that our commerce amounting to $260\frac{1}{2}$ millions of pounds a year is handled by others, means a loss to us of all charges that are made for its transport, for its insurance, for its financing and for the handling and remission of its price What percentage does this come to ? Shall I say 5%, covering all charges or shall we take it at even less At 5% it comes thirteen millions sterling and over , at 4% to ten millions sterling and over , and even at one per cent it means at least two and a half millions sterling The magnitude of these figures will be clear when we remember that the paid-up Capital of the three Presidency Banks of India will be covered twice over by even one per cent secured on our Foreign Commerce

57. Now I have laid special stress on this matter, as I believe, Commerce is easier than manufactures, and because there are vast openings, if we only set about them I am aware of the competition and jealousy , I am also aware of the difficulty of languages, and in our case also of social and physical habits of the people ; I am again aware that there are vested rights and special privileges , but these factors are also present, in addition to several others, in the case of manufactures. Therefore, commerce

is comparatively easier to handle and to master, and it follows that it should be taken up seriously and without loss of time.

58 The difficulties in the way of our entering foreign trade will melt away by themselves, first because (1) the Commerce of India is bound to expand and we can catch a part of the expansion, secondly because (2) the Commerce of India has to change its channels, as countries other than England have also become manufacturing countries, and are evincing keen desire to push their oriental trade

The advantages of adopting a life of commerce would be many, as in addition to pecuniary advantages, to which all economic life aims, we will be able to buy in the cheapest market, and to sell in the dearest, we will learn what other people want from our resources, natural and manufactured, and we may tap, to our advantage, resources and sources hitherto unknown to us. We will also have opportunities to gain experience in manufactures, and methods of business, of large organizations of advanced countries, which experience, unfortunately, cannot be made available for a sit-at-home Indian or even to a traveller. A traveller may collect facts, he may learn much by observation, but he will not get the actual experience necessary. We may in this way make friends abroad, to help us with capital, knowledge, and materials. This may lead to partnerships and associations beneficial to both the parties. This, in short, is what Commerce can do for us.

Communications.

The consideration of Commerce naturally leads to the consideration of facilities for communications and transport. In our own country the Post and Telegraph offices, both run by Government, are excellent institutions, and the rates of charges are within our means. They are fairly well extended and are extending, keeping pace with the growing needs of the people. The only drawback in them is that Indians have only the subordinate handling of the machinery. The Railways, which also help much in personal communication, are fairly extensive, and means for further and much more rapid expansion, I am sure, will be found if a wiser and more careful and more sympathetic policy is

followed. Roads there are, but still a great need exists for more roads both in British India and Native States. This subject, I am afraid, does not receive the same attention now that it once used to do. Public Works Road Branch, was primarily intended to build roads for purposes other than Commerce, but now that the trade of the country, both for internal and external supply is progressing, a new impetus should be given to road making, and the Commercial Department of the Government of India, if it does not do anything else for us might do this much and lay down a programme of road building. Means of carting stuff from place to place, from the Mundi to the Station, and from the station to the Bazar are very crude and dilatorious. Here, again, is an opening for the ingenious and the enterprising to invent cheap means for handling this traffic.

Auxiliary Factors.

59. Auxiliaries to trade are storing places, in towns and market places, and storing accommodations at Railways and Sea Ports, as also packing materials and packing facilities. The subjects are simple enough but proper scientific care is not being taken of these matters.

60. Beyond the limits of one's country, one has to look to the shipping facilities, the docks, and the handling of cargoes. Foreign commercial customs, practices and laws have also to be studied,

As these factors have not yet entered into our reckoning I will not take up your time with an elaboration of ideas about these matters; but in the internal economy of business there is one very important factor, which requires more than a passing allusion, at our hands.

Railway Ownership.

61. (a) Railway is said to be the largest industry of the country. So it is. It employs over 16 thousand Europeans and Anglo-Indians and those who pass under those names, and over half a million of Indians. It covers the whole country, and its track is now 33 thousand miles of open lines. On its proprietary side it is

a Government monopoly, with the exception of a few hundred miles which also will, in time, fall into Government hands. It is a paying concern, and therefore the monopolist policy is, so far, justified. But the rates of fares and freights are also Government or contractors' monopoly, and if the Government had chosen Railways could have always paid in the past and will always pay in the future. There is no science about Indian Railway fares and freights, and very little competition.

Managements

(b) The working of the Railways, both State and others, is shared by the Government and some private English Companies, very little management being in Indian hands. This is a policy open to much objection and works adversely to Indian trade interests. Private English concerns are not bound by the same moral duties towards Indians as the State is. This tells both in the way of keeping out Indians out of places of honour, responsibility and profit; and also in regulating traffic rates.

Capital

(c) Very little Indian Capital has so far found its way to Indian Railways. Some people assert that this is so because the policy of the Government has not been favourable, and my own well-considered opinion on the subject fully endorses that view. While Government borrows at $3\frac{1}{2}$ per cent, Port Trust, Municipalities and Improvement Trusts get funds at 4 per cent; the Post Office has received several crores of rupees at an interest about 3 per cent; and the Bank Deposits in India range from 3 to 6 per cent maximum, according to the standing of the Banks; the question naturally arises why do not the Railways attract Indian Capital when their earnings amount to 6 per cent and over, with a guarantee, rebates up to 5 per cent and with a clause of repurchase at 125 per cent. The truth is, that the portals of the Railway Board Offices are not open for free admission of Indians, and the policy, whatever its worth on paper, is highly exclusive and restrictive. It is also a fact that the Indian Capitalist does not know that Railways can also be financed by him; and there are no organizations for helping popular investments in Indian Railways.

Stores etc.

(d) Construction and administration of Railways require stores, supplies, vehicles and other goods worth millions every year. The policy, hitherto followed, has not been in any way to encourage home productions; and it is one department where the general opinion, held by the powers that be, is that Indians can neither manage, nor construct, nor manufacture railway requirements, nor can they run Indian trains, nor drive Engines, or guard the travellers. This is, therefore, no doubt the largest industry in the country, but not the largest Indian industry.

Traffic

(e) The traffic branch of the Indian Railways is in many cases run against the interest of the country's manufacturers, but as this subject is now a commonplace knowledge of the people, it need not detain us long, but this is not all that can be urged against handling of traffic by Indian Railways. Everybody now complains of the shortness of waggons, of a preferential and differential treatment in the supply of waggons, and of the practice of allowing rebates and regulating freights. There is the further complaint that there is no time limit to the transport of goods, 5 days, 15 days, and 25 days are taken on the same journey for the same class of goods.

What is Required.

If India is ever to become a manufacturing country, this system or rather the want of a system in handling traffic by Indian Railways will have to be entirely changed. Some of the curiosities of the Indian Railway traffic are most amusing. Any one who has got anything to do with our Railways could cite a number of them from his own experience. I will mention only two. One is that my goods which go a shorter distance pay a higher freight, than the goods of my competitors, which have not only to go a longer distance, but which actually pass in front of my factory, and are booked for the same destination as mine. I had once upon a time to send Cotton from Punjab to Bombay, and then get it at Surat, because the combined freight was cheaper than the direct freight from Punjab to Surat. What is therefore wanted

is a Traffic Board, consisting of Indian and European Members to regulate the traffic rates.

Labour.

(f) Indirectly the railways, as pointed out above, have a great formative influence on the tone of other Industries. Hence this largest industry of India, requires to enforce greater economy in the employment of labour, at all stages of administration, and to improve the morale of its employees. I am not alluding to this fact, as the result of any pique but the tone of labour is deteriorating in all its phases in the country, because the Railways pay the best, and expect the least work, and employ the least efficient. There are men to spare, in all walks of Railway services, and these must be spared, to the lasting good of Railways themselves and other industries.

(g) The Railways already form a monopoly, but if the Government will make it a National monopoly, great things may come out of it in India. Let Indians be gradually, at least, introduced to high places of its administration, and Indian ideas and suggestions be invited to make it a National concern. It is the largest Industry no doubt, but the people have paid the smallest attention to it so far.

General Observations

62. The field of economic enquiry is very extensive and I am afraid I have already tired your patience, but I must briefly refer to what two of my predecessors have said about our social readjustments. I will go further and say that the conception of an "economic man" in western economics has been very limited. He was at one time depicted as a man bent on making profits anyhow. He had the good wishes of his Government with him, and the blessings of his country were showered over his head. He was depicted as a man stern and determined, with hardly any heart and feelings. Ideas have now changed and the modern "economic man" of the West, is depicted with a kindly face indicating benevolent intentions.

Now let us picture an Oriental and especially an Indian 'economic' man. I fear you will have to place the following in

some order or other in the picture to realise what he really should be

- 1 His ragged dress, marked "no capital".
2. Satuka ata.
3. His Mahurats.
4. Sea Voyage injunctions.
5. His wife and children.
- 6 Cares of dissolution of partnership.
7. Division of parental property.
8. Government.
9. Railways.
10. Bad labour.
11. Bad tools
- 12 And lastly no economic ambition no but longing for
Nirvana.

Now please try to imagine the picture of our 'economic man' and then consider the innumerable number of adjustments that will be required to idealise our picture of an 'economic man'.

63 Now the problem before us is to improve and idealise the above picture We want pictures to paint this picture, and Senior Wranglers to wrangle out this problem of idealisation While we want publicists to push the economic ideas, we want leaders to work manufactures and commerce; we also want thinkers and students There is a rich field for thought and enquiry This picture has many more elements than the Western picture has and therefore it requires a much larger elaboration. Some of the Chapters of a treatise in this new science will comprise :

1. Economic view of Religion as taught by prophets and reformers and as practised by the people

2 Economic view of Social laws, practices, customs and ideas.

3. New conception of State duty

4 New ideas about labour.

5 New theories about Railways

I am indeed glad that the members of the National Council of Education, Bengal, are taking up Economic subjects for study and enquiry, and I was particularly pleased with reading a book on Indian Economics from the pen of one of them

Conclusion

64 After considering the whole range of the subject in *as short a space of time as possible*, the conclusions at which I have arrived, are these We must, however, always keep in mind that in business the line of least resistance is always the safest and the surest course to follow .

1 That for one generation at least the ambition of our educated young men should be to adopt a business career, in preference to an official, educational or professional and that parents should endeavour to give them an outfit qualifying them for this career in preference to any other , and that the marriages of the young men, to be dedicated to business, should be postponed even beyond the Vedic limit of 25 years. And where this may not be possible the marriage vow should directly and distinctly indicate that the woman whom he weds, would be prepared to go to the other end of the world and roam all over without complaint or grievance , and that investment in her husband's business, or in the business to which he is attached, would be her best jewel and ornament

2 That the Government, aristocrats, chiefs and the people should at once, and without loss of time, provide the country with Business and Commercial Colleges, where a knowledge of business machinery, organisation, and efficiency and a knowledge of modern languages should be imparted

3. That chairs of Indian Economics and Agriculture be founded in connection with all the existing and projected Universities.

4. That Economic Science be studied by all our public men ; and by the rising youths of the country with special reference to Indian problems. The study will help in making many lasting reputations, and will afford a rich field for building up a new Science of Oriental economics or the economic science of the weak.

5. That the country be studded with Chambers of Commerce, walking in the footsteps of similar institutions now existing and which have existed in European countries ; whose one function amongst others should be to find a business career for honest, capable, and willing educated Indian youths

6. That special associations, such as cotton spinners and weavers, cotton dealers , of Bankers and of Insurance Companies ; be started at central places, to look into the interests of their special concerns.

7. That Banking, Insurance and Foreign commerce should form our first concern.

8. That Government should throw open to Indians half the top appointments, in all its Technical departments, namely, Railways, Telegraph and Post Offices, Forests, Surveys, Geological and Metrological Departments, Irrigation, Electrical and Mechanical Workshops, Electric Supplies, and Civil Engineering.

9. That special and sufficient provision be made in all Local Councils and in the Imperial to have Commercial and Industrial representation.

10. That the commercial departments of the Government of India should see to the needs of Indians as well to those of Europeans, and that they should back Indian those efforts as often as of outsiders.

11. That Native States should help the movement of economic regeneration, as they represent $\frac{1}{5}$ of the whole of India ; and that means should be found to have their co-operation with the Government, and the people of British India, instead of their making isolated efforts.

12. European Manufacturers, Bankers, Insurers, Exporters, Importers and Transporters should advance Indians beyond the position of clerks, and entrust them with duties requiring intelligence, responsibility and capacity.

13. That Swadeshimism be taken at its word, and be organised principally in the channel of capital.

14. That Banking and Insurance Institutions be pushed, and should be domesticated.

15. That Boards for Technical education be inaugurated, and they should endeavour to grapple, with the assistance of public and subscribed funds, to raise the standard of efficiency of labour and to secure greater economy in all handicrafts, and factory industries.

16. That public press should give more attention and space to economic questions rather than to general news, political discussions, racial bickerings and individual panegyrics

17. That the Industrial Conference should have an annual allotment of Rs. 25,000 in place of Rs. 5,000 and should employ more numerous staff, one to every department of Agriculture, Commerce, Industries, Mining, Co-operation and the like; and these men should travel to organise, educate and, if necessary, to agitate.

18. But above all what we want is peace, peace unbroken both from outside and from within.

Last Word.

65. I cannot but conclude this Address, with the words of my old master, Professor Alfred Marshall of Cambridge, whose enthusiasm for Economics, both Theoretical and Practical inspired me with my present career. He said to me, "Do what you like in life, but do not give up Economics" and I have tried to act up to that advice.

Professor Marshall, whose words apply equally to our present condition as they did to Cambridge a quarter of a century back, says —

“Such then is the work that lies before economics science . let us consider the relation in which Cambridge stands to it There is wanted a wider and more scientific knowledge of fact , an organ stronger and more complete, more able to analyse and help in the solution of the economic problems of the age To develop and apply the organ on rightly is our most urgent need and this requires all the faculties of a trained scientific mind. Eloquence and erudition have been lavishly spent in the service of Economics They are good in their way , but what is most wanted now is the power of keeping the head cool and clear in tracing and analysing the combined action of many combined causes Exceptional genius being left out of account, this power is rarely found save among those who have gone through a severe course of work in the more advanced sciences. Cambridge has more such men than any other university in the world But alas, few of them turn to the task

“For indeed the work is urgent Material wealth has ever had but slight charms for the Academic mind. Our best men both young and old have found their joy in doing the best work of which they are capable, and have cared but little whether its money gain would be great or small. Secure themselves of being able to live a refined and cultured, and with a just and noble scorn of those who hunt after superfluous riches, they have often drifted into an attitude of philosophic indifference to wealth and all its concerns. But this has been a great and disastrous mistake

“For why are so many lives dragged on through dirt and squalor and misery ? Why are there so many haggard faces and stunted minds ? Chiefly because there is not wealth enough , and what there is, not well distributed, and well used. Much has been said of the physical suffering and ill-health caused by overcrowded dwellings, but the mental and moral ill-health due to them are greater evils still With better house-room and better food, with less hard work and more leisure, the great mass of our people would have the power of leading a life quite unlike that which they must lead now, a life far higher and far more noble.

“ It has often been observed that one cause of the marvellous achievements of the Greeks was the directness with which they addressed themselves to the problems of their own time. Never was there an age full of great social problems as ours, surely they are not unworthy of the best efforts of the best minds among us. Think of the force that University men might bring to bear by their personal influence, if great numbers of them had learnt to think clearly and had studied the age in which they live. They might then take a wise, an active part in relieving misery without making pauperism, in helping the people to educate themselves and rise to a higher level to become not only more efficient producers but also wiser consumers, with greater knowledge and greater love of all that is beautiful.

“ And, lastly, if more University men looked upon their life here as preparing them for the higher posts of business, what a change there would be in the tone of business! Just and noble sentiments might be introduced into counting-house and factory and workshop, without the dangers which weak benevolence runs of turning sentiment into sentimentality, of courting ruin and increasing the common prejudice that a pleasant looking house of business is likely to be financially unsound.

“ It will be my most cherished ambition, my highest endeavour to do what with my poor ability and my limited strength I may, to increase the numbers of those, whom Cambridge, the great mother of strong men, sends out in the world with cool heads but warm hearts, willing to give some at least of their best powers to grappling with the social suffering around them, resolved not to rest content till they have done what in them lies to discover how far it is possible to open up to all the material means of a refined and noble life ”

The Annual Report.

The President —The Hon'ble Mr R N Mudholkar will present the usual Annual Report on the working of the Conference during the year.

The Hon'ble Rao Bahadur R N. Mudholkar.—Mr President, ladies and gentlemen, it is a part of the duties of

the General Secretary to lay before you the Report of the working of the Industrial Conference and at the same time to submit along with it a record of the general industrial activity during the last twelve months, *viz* the activity of the Imperial Government, of the Provincial Governments, of the Native States and of the people. The Report is printed and I believe copies of the same have been distributed; if not, they will be distributed presently. I shall not at this hour read the long report which has been printed and which is to be published and placed before the country. I shall only draw your attention to a few facts contained in my own report. The first thing I have to draw your attention to, is that last year at this Conference a resolution was passed for the purpose of making enquiries into the causes of the numerous failures of industrial enterprises in the different parts of the country, and I was commissioned to employ competent persons for going about and making enquiries in those parts to find out whether it was on account of anything wrong in ourselves, or anything wrong in the methods of our administration or anything in the surroundings which brought about these unfortunate results. It is a matter of great regret to me, that it was not possible for me to do anything in the least in this direction, for the very simple reason that our appeal for funds was not responded to even to the extent to which it had been in former years. Gentlemen, it is an unpleasant duty which lies on me to point out that persons who occupy very high positions in the Industrial Conference and persons who occupy very high positions in the country, persons whom God has blessed with the good things of the earth, have not seen their duty to the country in the matter of the development of its industries and commerce. Appeals were sent to them over and over again; but I had to wait for months and months and absolutely no response was made to them. And it is owing to this reason that the task laid on me by the Conference was not carried out. The usual work of the Conference, namely, that of bringing out the report and a fresh edition of the Directory of Indian goods and Industries has been carried out and materials for certain other compilations which will be placed before the country are being collected. But the great

work of organising committees in the different provinces, or rather, reviving the committees which some years ago were established but which after a year's or in some cases of only six months' existence went to sleep—that task has not been carried out, because the funds necessary for this purpose were not supplied to me. Another important thing, namely, the establishment of a bureau of information—that also could not be carried out for the same reason. This year another appeal will be made to you, but in reference to it, the inability of your Secretary to do all the things he wished and the things which he was commissioned to do, has to be placed before you and I trust this fact will receive the consideration it deserves from the people.

In regard to the general activities in the country, it is a matter of great pleasure to me that the Imperial Government and the Provincial Governments are taking the same interest—I may even say in some matters greater interest than has been evinced by them for some years past. In Bombay, the enquiries which had been instituted in regard to hand-loom weaving and leather manufacture are now being supplemented by an enquiry in regard to the oil industry namely the expression and refinement of oils and their bearing on the different industries which flow therefrom. In regard to paper-making and other industries also, experts are being employed by the Government to make enquiries and to submit reports. All that has been done in these matters, you will find stated here.

Our own people have in this respect not been quite quiescent, though the activity is not what it was seven or eight years ago. The enthusiasm of that period has gone away, but there is one act, one great thing done by one individual to whom the thanks of the whole country are due, that I would like to mention to you and that is the splendid, the most munificent and most generous gift of Sir T. Palit, (Cheers.) to the Calcutta University, for the promotion of Science, theoretical and applied. There have been also gifts made on the Bombay side and much humbler work done in other parts

of the country You will find mention of them made in this Report and as the programme appears to be a long one, I will content myself with making these observations and laying this Report before the President and before you

The President —Gentlemen, the Report that has been presented by the Secretary is full of facts and he has made an introductory speech with regard to its being adopted. I do not think any further discussion is required in regard to it.

The Report was unanimously adopted.

Papers contributed.

The President —Gentlemen, now, we will proceed to the reading of a few of the papers that have been received. I call upon Mr. Mohiuddeen Sahib to read his paper on the Co-operative movement.

Mr. Mohiuddeen Sahib.—Ladies and gentlemen, I may tell you at the outset, that I am a public servant and my duties are to supervise and propagate the co operative movement in the Provinces of Behar and Orissa. During my wanderings I was very much struck with one thing, that is, the absolute ignorance and apathy of the educated people towards this movement I confine my remarks only to these provinces, because, from what I have read in the different reports, I find that in Bombay and Madras the people have come forward voluntarily and heartily to assist the Government and they have shown so much co-operation in the movement that Government have now very little to do In Bombay, the munificent philanthropist, Sir Vithaldas Thackersey has started a big Bank which propagates and supports this movement I know that in this Province also, the educated people have only to know what immense potentialities there are for this movement for raising the economic condition of the people, and this hope is my excuse for proposing to read a short paper on Co-operative Societies before you.

The President next called upon Rao Saheb Ganesh Nagesh Sahasrabuddhe, and Prof. J. N. Samaddar to read their papers which are reproduced elsewhere.

The Hon'ble Rao Bahadur R. N. Mudholkar —Gentlemen, I shall now only read the names of the gentlemen and the names of the papers which have been received by us in addition to those of which the purport has been given to you by the authors. There are in all you will be glad to learn, 24 or 25 such papers, some of them of great merit; especially the paper of that keen industrialist who is in Government service and who is superintending the work of Commercial Intelligence, I mean Mr. Noel Paton, it is almost a literary treat, and I am sorry it is not possible for me to read even extracts of it, as at one time I proposed to do, because, there is a lot of other work to be done. It tells us what different works are being done in different parts of the country and how in spite of all that they say in conservative India, great transformation is going on and how different trades are handled and what progress has been made. It talks of Burma, Central India, of Northern India, busy Bombay, Southern India, Mysore and Travancore. I am sorry, as I said, that I can't read that most readable paper to you. Another paper is in regard to cotton manufacture by Mr. H. R. Pitke. Third paper is on 'Sugar-cane cultivation' by Babu Mukhtar Singh, Pleader, Meerut; another paper on "Agricultural Associations in the Deccan" by Mr. V. K. Kogekar; the fifth is on the "Preservation of National Art, handicrafts and character" by Dr. R. V. Khedkar, Kolhapur. The sixth is on cotton cultivation by Babu Mukhtar Singh, the same gentleman who has written on sugar-cane cultivation; the seventh "small industries and scope for their development in India" has already been summarised to you by my friend Mr. Ganesh Nagesh Sahasrabuddhe. The eighth "The industrial Exhibition and sale of work of the Salvation Army in Bombay", is a plea for cottage industries by Mr. Trimbak Ramchandra Kotwal. It is a thing which will give great pleasure to my

friend Mr. Ganesh Nagesh. The ninth is "Unlimited Liability as a National asset" by Mr. H. R. Crosthwaite, Registrar of the Co-operative Societies, Central Provinces and Berar. This again gives to us in a very convenient form all the advantages and benefits which the co-operative movement is likely to confer upon us. The tenth is "Banking in India" by Mr. C. Gopal Menon, Madras, who also wrote about Co-operative Societies in former years; the eleventh, "prospects of sugar industry in India" by Mr. G. N. Sahasrabudhe; the twelfth "technically trained students" by Professor V. G. Kale, who has written practically a note criticising the report of Lt. Col. Atkinson and Mr. Dawson in regard to the technical enquiry entrusted to them by Government. You will hear more about that report in the course of this day. The thirteenth is "the Possibilities of a revival of hand printed and painted cottons of South India" by Mr. W. S. Hadaway, Superintendent, School of Arts, Madras. That again is a thing in regard to the handloom industry and textile manufactures. The fourteenth is "the Development of industries in Travancore" by Dr. Kunjan Pillai, the fifteenth, "the History of the Brass and Copper Industries of India" by Professor P. G. Shah. It is a very readable paper. It is very long and is full of information which extends over 60 pages of closely printed type. It gives you an immense amount of information. The sixteenth "Causes of general failure of oil pressing industry in Bombay Presidency" by Mr. Kapilaram Vakil, is a paper in regard to which an antidote will probably be administered to you by our friend the Hon'ble Mr. Parekh. The seventeenth, "the Law of trade-mark in British India", by Mr. S. Krishnamachari, Madras—deals with the legal aspects of the question. The eighteenth is "Silk in India" by Mr. M. N. De. He is an authority on the subject, and is the Sericultural Assistant to the Imperial Entomologist, Pusa. The nineteenth is "the place of domestic industry in Indian economic life" by Professor R. K. Mookerji. The twentieth, "the Importance of Manual instruction in Indian Schools" by a gentleman who is entitled to speak with authority on educational matters, Mr. H. J. Bhabha,

retired Inspector General of Education, Mysore State, at one time my teacher, when I was a boy in college. That gentleman tells about the great importance of training not only the head or even the eye as drawing enables you to do, but also the hand which is as essential for all cultured men as the training of the brain. It is a very readable paper. The twenty-first is "Co-operative Village Libraries" of which Professor Jogindranath Samaddar has just given us an interesting summary. The twenty-second is "the Study of economics in India" by Professor Russel of your college here who is rightly considered as an authority on Indian Economics. The twenty-third, "the Patna College, Chanakya Society by members of the Society" many of whom are to-day serving as volunteers and thereby rendering very good account of themselves, the twenty-fourth "how to develop the Glass-making as a cottage industry in India" by Babu Pauna Lall, Amballa.

These are the papers. Copies of them will be given to such gentlemen as really care to study these questions and afterwards, as you know, they will be embodied in the report of the Conference. As I said I am very sorry that even the purport of these papers cannot be given for want of time. But I assure you that most of them will repay not only a mere perusal but deep and conscientious study. I only ask with the President's permission to put one thing before you, that is, to tender our sincerest acknowledgments and our thanks to the gifted and eminent writers of these various papers and to convey to them our gratitude (Cheers)

All these papers will be found reproduced elsewhere

The First Resolution.

Outrage on the Viceroy.

The President —Now we proceed to the consideration of the Resolutions. The first resolution is in these terms

"The Indian Industrial Conference expresses its indignation and abhorrence at the dastardly outrage committed upon the

life of His Excellency the Viceroy and begs to offer its respectful sympathies to Their Excellencies, Lord and Lady Hardinge and the Conference fervently prays that His Excellency will have a speedy recovery and restoration to health."

The resolution was put to the vote and carried unanimously.

Second Resolution.

Chairs for Agriculture and Commerce.

The Hon'ble Mr Rao Bahadur R N Mudholkar in proposing the Resolution said —

Gentlemen, I have the honour to propose the resolution which stands in my name. I shall first read it to you .—

"In view of the great importance of properly developing agriculture and Indian Commerce, this Conference urges upon Government and the people the urgent necessity of establishing Chairs of Agriculture and Commerce for spreading knowledge of the general principles of these subjects among persons who do not wish to specialise in them, and for the suitable advancement of Technical Education, the Conference strongly advocates the creation of Boards constituted on lines similar to the Senates of Universities for directing and regulating instruction therein."

You will see that the proposition falls under two main heads. One of the main heads is itself subdivided into two sub-heads. Gentlemen, we are called "the Indian Industrial Conference" But, here the term Industrial is used in its most comprehensive sense as including agriculture also. We have been talking a great deal and striving to no small extent for the advancement of what may be called the manufacturing industries as differentiated from the agricultural industry. But one thing we have to remember is this, that INDIA is and must continue to be essentially an agricultural country. Agriculture is and must continue to be the staple industry of the country. More than two-thirds of the population are directly connected with the cultivation of the soil and another 25 o/o more is indirectly connected with it. So the importance

of agriculture in India does not require any demonstration. Now it is this industry which has to be developed for the simple reason that by the law of diminishing returns, not in the sense in which economists use the word, but in the sense in which physicists use it—by the law of diminishing returns our agricultural industry is not as productive and as advantageous as it used to be in former times. Compare the produce of our Indian fields with what you find in colder climates, in BOHEMIA, in BAVARIA, in ENGLAND and in CANADA. We do not get from one acre even half or even one-third of what they get in CANADA or BAVARIA. The average yield per acre is only about 800 or 900 bushels, at the most. Generally it can be said to be about 600 bushels, whereas in the countries of the North and the West it is as large as 1800 and at times even more. From the AIN-I-AKABARI you find that the yield in those times was 1200 to 1600 bushels per acre. Evidently something wrong is at work there, and in regard to that various things have been suggested and various things have been done. Now in regard to agriculture itself there are two things which you have to bear in mind. In those lands where the proprietorship of land is vested in large Zamindars, where there are huge estates which have got the benefit of the permanent settlement, it is very necessary that the recommendation made in this resolution should be carried out. The person who directly tills the lands, is the person in whom expert knowledge, so far as the actual cultivation is required, ought to be instilled, and ought to be made general. Over and above that you have got the proprietors and the various tenure holders. They are all interested in their estates and unless they have a general knowledge of the principles of agriculture, they cannot take that intelligent interest in the development of their estates which alone can bring about the agricultural regeneration of India. I suppose, I may say I hope, that it is not necessary for me to press this point much further. It is only to be recognised in our parts of the country, and I am sure it is recognised in this part of the country also, that what you require is not the man who knows the details of the actual

cultivation, but the man who has got a sufficient grasp of the principles of agriculture, who knows also the economic and the commercial side of it, who also can take large views. It is that kind of knowledge, information and instruction which is to be imparted to persons who are in the higher rungs of the ladder; and for this purpose this resolution suggests that there should be chairs of agriculture established in the first place in the Universities—and I believe that will have to be carried down below—for the purpose of giving this kind of general instruction in the principles of agriculture.

We come next to the question of commerce, which is of still greater importance. My friend Rao Sahib GANESH NAGESH depicted to you the various failures which large industries have suffered. I am in agreement with him in regard to these occurrences and nobody is more sorry than myself for these unfortunate failures. I am also in very great sympathy with what he says in regard to the starting of cottage industries; but like practical men we have to recognise hard facts. There are certain industries which alone can be carried out with any chance of success for any length of time by manual operation at our homes. There are others which, we must recognise, have to be carried on on a large scale to be remunerative, and which unless large capital is organised and large establishments are employed and the working carried on on a grand scale, will never at all be profitable and will never yield any advantage to the country or to their conductors. I myself am absolutely no lover of the factory system, it is common knowledge that in too many instances the system kills humanity towards the poor operatives. But there are many hard things of this world, which we have to recognise and one of them is that you cannot carry on many industries except on a very large scale. Both for these large industries and the small industries one essential is required, *viz.*, a knowledge of the general principles of economics. Without that the whole system is insecure as if based on a foundation of sand. The collapse of so many factories and so many industries was due to want of knowledge, want of experience, implicit trust in persons, who do

not themselves know anything, in some instances in persons, who to ignorance added some qualities which I do not like to mention. This want of sufficient capital, want of knowledge as to the best way of doing things and as to the best market to be and various other causes have brought about the downfall of these particular industries. To prevent the unfortunate recurrences of these failures and to see that they do not produce the disappointment which they are bound to produce, there is great need of a more intimate knowledge of commerce and commercial principles, the machinery of business, the methods of banking, the way in which operations on a large scale are carried on in other parts of the country and how the commerce of the world itself is carried on—all these things ought to be made much more familiar than they are at present. Without that kind of knowledge, none of your industries, none of the efforts, which you are making either individually or in numbers can succeed. It is, therefore, of the utmost importance that this knowledge should be obtained not only by those who carry on these operations, not only by the managers of the business, I mean persons entrusted with the actual work in the office, but also by others who are not directly connected with that business.

Then I come to the other thing. Our president agreeing with his predecessors, pointed out to you how along, with capital, skill is also required and that skill can only come from technical education. Now in regard to technical education this proposition has become necessary, as I said, after the very disappointing report of the Committee from which we expected a good many results. I am sorry I cannot go into the whole history of the question, which I gave to my friends yesterday. But I for one should have thought that practical suggestions for imparting a higher form of technical education would be put forward by persons of the knowledge and experience of Lieut. Col. Atkinson and Mr. Dawson of Bombay. However, those suggestions are not there. One thing which we have to recognise is this, that it is only by the knowledge and skill, not mere bookish knowledge, not merely knowledge

acquired in factories,—it is by a combination of theory, that is, knowledge of principles with practical training acquired in the factories—it is only by these things that your industries can progress and for that you require suitable technical education. The technical education which we want, therefore, is one which the directors, the organisers of industries, the managers and the supervisors ought to have; and for this it is necessary to have the matter entrusted (—at present there is nobody who can control it)—to Boards who will constitute what we may call the Senate in regard to technical education. The persons who control the Directors of Public Instruction know absolutely nothing of technical education. I can say this without the least fear of being called mistaken. We know that not one of them knows anything about technical education. The Government of India do not profess to be persons who know anything of technical education. It is a fortunate thing that the member in charge of the department of education is a gentleman who takes very keen interest in technical education. But he does not profess at all to be any authority on the subject of industries. The Senates of the Universities, except in a few cases, have no members who can lay down what are the proper courses to be adopted for technical education. In these circumstances, it is absolutely necessary that if the proper kind of technical education is to be imparted to our people and if India is to have industries of her own conducted in a proper manner and successfully, it is absolutely necessary that we must have the proper kind of technical education and we cannot have that unless we have Boards or if you like the word “Senates” of technical education and it is on that ground that this resolution is framed.

With these words, gentlemen, I commend the proposition to your acceptance.

Hon'ble Rai Bahadur Krishna Sahay in seconding the Resolution said —Mr. Chairman and gentlemen, After the able and lucid exposition of the subject-matter of this resolution by our veteran leader, the Hon'ble Mr. Mudholkar, there remains very little for me to say to commend this resolution to you. Gentlemen, India is a poor agricultural country and the vast millions of her people depend on agriculture. They follow it as the avocation of their lives. You and I who belong to the profession will not fail to fall back upon it if at any time, necessity will compel us to do so. Therefore, the question of the development of agriculture is a question of vital importance in India unlike in other countries. Look at the sad state of affairs as it exists at the present day. You have people employing the same implements of agriculture, which they did centuries or thousands of years ago. They use the same manure which their forefathers did. In fact you see in agriculture everything which should have existed in ante-diluvian time. If you look round you, you do not observe any progress. The question naturally occurs to you, "What is this due to?" "What are the causes and how can they be removed in order to ameliorate the condition of agriculturists and with them our condition too?" I assure you that much of it is due to want of knowledge of the science of agriculture. It is proposed, therefore, to urge upon the Government the necessity of establishing chairs for the instruction in and imparting of the knowledge of the general principles of agriculture throughout the length and breadth of the country. Now Government have done a great deal in this direction as we all know. They have established Colleges of agriculture and model agricultural farms. For instance, we have here at some distance from this place, a college for research in agriculture and we have also in the district of Bhagalpur a college where students receive elementary education in agriculture. These two institutions are no doubt opening up avenues for the people who undergo instruction in agriculture. But they are more or less, particularly the institution in Pusa, intended for persons who want to specialize. What the resolution urges upon the Government is the desirability of

founding chairs to impart instruction in the general principles of agriculture and also of commerce. As regards commerce little need be said. We all know the importance of commerce in the development of the resources of the country. Many of you are familiar with the Sanskrit saying "Lakshmi" lives in Commerce and half the profits can also be realised from agriculture. Even a cursory glance at the condition of the various flourishing countries of the world will conclusively prove to you the force of this ancient saying. Commerce has made England what it is in the present day and what it is likely to be in the future. Japan a modern country has improved its condition by commerce only. It is needless therefore to emphasise this point at great length *viz.*, what an important part in development of the natural resources of the country commerce plays, what I have said as regards agriculture applies to commerce also and with greater force. It is, therefore, suggested in this resolution that Government ought to be moved to found chairs to impart general instruction in Commerce. I do not know any important institution in this part of the country for a purpose like this. There are institutions to give instruction in commerce but what their possibilities are, one can have no general idea. But there are institutions in other parts of the country, where they give instruction in commerce but the means provided for imparting this instruction in commerce are not adequate or at any rate are inadequate to meet the growing ambition of the people to have some knowledge of commerce. It is a desideratum and the sooner it is met the better for the people as well as for the Government which is doing so much for us. Gentlemen, our Government is a benign one and I am sure that we have only to draw its attention in a systematic manner in order to enable us to have the Chairs referred to in the Resolution which has been so ably proposed by Rao Bahadur Mudholkar. We must be knocking at the gate, if we want to have its portals opened out to us. These are the things which we must have and the sooner the better. Therefore, gentlemen, we should urge upon the Government the desirability of instituting Chairs for commerce and also for agriculture.

With these words, I commend the resolution to your acceptance (Cheers)

(The resolution was put to the vote and carried unanimously.)

Third Resolution

Indian Chambers of Commerce

Mr L. V. Kaikini proposed the Resolution in the following words —

The Resolution which I am asked to propose runs as follows —

"Th^{is} Conference draw the attention of the Commercial and other business classes

- (a) To the great necessity of establishing Indian Chambers of Commerce and Associations of the Industrial and Financial interests, wherever circumstances exist and,
- (b) To the importance to themselves and to the country of their engaging to a greater extent than hitherto, in the foreign trade of the country "

Gentlemen—this resolution calls upon our business classes to organise and systematize their commercial activities, because I suppose it is a great lesson, which I trust our country, at great cost has, at last learned that be it social reform or industry or any other sphere of activity, without organisation and discipline nothing can be achieved. If our countrymen are lacking in any of the qualities more especially than in all the others it is these two qualities; therefore, the Industrial Conference has rendered a public service by putting before you this important resolution for your acceptance. We know we have made a small beginning in the way of starting Indian Chambers of Commerce and similar Associations. In Bombay, we have an Indian Merchants' Bureau and a Chamber of Commerce which have been doing good work in watching over the interests of the Indian merchants in that province and generally of the commerce of the country. In Calcutta, we have the Bengal National Chamber of Commerce and also the Marwari Chamber of Commerce.

Besides, in Bombay we have got a Grain Merchants' Association and a Millowners' Association and several other associations with regard to the different industries. These institutions, although they are few are happy instances and point to the one great fact that our Indian merchants are realising gradually the need and the importance of these associations for the protection of their vast and varied interests in the commerce of the country. Therefore this resolution does nothing more than call upon the business classes to start more business associations and more business societies, wherever suitable circumstances exist for their progress. This modifying clause need not be interpreted as providing a loophole to those merchants who want to escape the responsibility which this resolution places upon them. Circumstances there may be of any kind; but if our people have the will and the stimulating desire they can create favourable circumstances for themselves. This is an important lesson which ought to be borne in mind in the consideration of this question. If you look at the European organisations for the promotion of commerce and the protection of their commercial interests, we can realise what infinite importance is attached to them. Unless we decide to watch our needs in the same effective manner not only by way of starting these associations and chambers of commerce, but also by giving them such hearty support as will bring them prestige and power in the councils of the Government and also knowledge in the commerce of the country generally, unless and until we do so, I do not suppose we shall have done our duty by the country to which we belong. Until we do that, I do not think our economic welfare will come soon. In fact it may stand in danger of forever remaining an illusion.

Now, the second part of the resolution exhorts our countrymen to engage to a greater extent than hitherto in the foreign trade of the country. Our President in his admirable address has told us what an important factor the foreign trade, the seaborne trade of the country constitutes in the economic life of the people. Look at the huge figure of £ 260,000,000 the total

value of the imports and exports. When we look at that huge figure and when we also remember the fact that in the huge transactions represented by that figure, our people from the beginning to the end have hardly any share—they are nowhere in this transaction—when we see this we can realise the miserable situation in which the commercial condition of the country is placed. Therefore this resolution calls upon you to engage to a greater extent than hitherto in the foreign trade of the country. There is one point which this resolution may bring forward in greater prominence and that is, if you look at European countries, they spend a lot on maintaining their foreign trade consuls even in the remotest corners of the globe, to report the situation, to guard their interests there and also to find out openings for their youngmen to exploit countries for their own benefit and not for the benefit of the countries which produce the raw materials. When we look at these activities of European commercial life I think we ought to direct our energies more to this important question. With these few words I commend the proposition to your acceptance

Dr. S. V. Ketkar in seconding the resolution said — Mr. Chairman and gentlemen, this resolution draws attention to two things, first of all “ to the great necessity of establishing Indian Chambers of Commerce and Associations of the Industrial and Financial interests wherever suitable circumstances exist ; ” and secondly “ to the importance to themselves and to the country of their engaging to a greater extent than hitherto in the foreign trade of the country ”. A question would naturally be asked, what in the world is the connection between these two items proposed in the resolution ? But there is a great deal of connection between them. A great principle is underlying it, because the first is a preparation for the second. If you are better united, if all these financial resources of the country are better organised and if you have a desire to exploit foreign trade, then the first thing, that is, proper organisation in the country itself would be a great help for us to exploit the foreign trade. There are a great number of

things which can be done if people unite ; and at present they have not done that India does not possess the same opportunities for expanding her commerce and exploiting foreign countries as other independent countries possess. We do not have a consular service, other countries have consular services. These different Associations, these Chambers of Commerce and Boards should unite together and establish their representatives in the different countries to establish the Indian trade abroad. We understand that among the British Colonies and Dependencies, Canada is trying to establish its own consular service South Africa and New Zealand are also trying to establish their legations in England. If anybody walks through Charing Cross, the central part of London, he will find these representatives of the different Governments sitting there to establish and promote their trade in England and through England all over the world, for at present London is the centre of the world's commerce If the Government undertake to do such work, well and good. If they do not, it is our duty to do it. We can unite and undertake this work. This is not a new thing In ancient India also we had some such associations. There were different trade guilds. These guilds were federated together under City guilds and these different City guilds used to send representatives to other countries to extend their commerce The principle is ancient and it is an Indian principle and there is an opportunity for extending it more and more. The political effects of united commercial undertakings would be great. If People would learn to unite and work together in business centres and give practical effect to their ideas they would impress the public mind more and more. Therefore with these words I support the resolution heartily.

The resolution was put to the vote and carried unanimously.

The Fourth Resolution.

The Recent Enquiry in regard to Technical Education.

Mr. N. A. Dravid —Mr. President, the resolution that I have to move is connected with the committee appointed by the Government “ to enquire into the wants of the employers of labour for technically trained men and to bring technical institutions into closer touch and more practical relations with the employers of labour in India ”. We have got the Report here and the resolution that I have to move is in relation to that The resolution runs thus .—

“ This Conference expresses its disappointment at the recommendations made by Lieutenant-Colonel Atkinson and Mr Dawson in regard to higher Technical Education and expresses its disagreement with the recommendation in regard to the State Technical Scholarships, as these recommendations are not calculated to secure that higher type of knowledge of principles and practice required for organisation, direction, and management of industries ”

In the able address of our President which we just now heard, he has summarised or extracted from that report the twelve recommendations made by this Committee You will find from a perusal of these recommendations that they are disappointing. The fault is not in those who went about enquiring into the question. Though the recommendations made within the sphere assigned to them, are quite adequate for that purpose, still the question has to be approached, to be useful to the country, from a larger point of view This the commissioners or enquirers have not been able to do on account of the scope of their enquiry being limited On page 3 you will find that the “ inception organization or improvement of industries ” is excluded from the scope of the enquiry. In the number of papers that have been read before you just now, there is one by Prof. Kale and in that he has summarised the contents of this Report and offered his comments on the same. I will invite your attention to that paper if you want to go carefully into this question, but I will give you two extracts out of

the many which have been quoted there. With regard to some of the points referred to him, the Hon'ble Sir Gangadhar Rao Chitnavis, whose name must be familiar to you all, says: "The points referred to me do not cover the whole ground of technical instruction, the true object of which, in my humble opinion, is and should be, in the present state of the industrial and commercial development of the country, not so much the supply of existing demands as to attract Indian talent to commerce and industry. The production of skilled servants is, after all only a subordinate question". And again our General Secretary has remarked "without minimising the importance of creating a class of trained" and educated operatives, it has been stated that the most important factors in "the increased production of national wealth would in the case of Indians at least at present, be the leaders, the managers, directors and supervisors of industries. It is the skill, capacity and training of generals and captains "which determine victories more than the bravery and steadiness of the rank and file of an army." With regard to the whole of this Report there is one initial observation which has to be made and it is this —They have approached the whole question from a very narrow point of view. The Indians who agitate for larger technical institutions and more thorough technical training do not want that we should have more skilled operatives in the lower ranks of the industrial organisation. What they want is that many industries that exist now and that are yet to be established should be handled by the Indians. That is the question and it is analogous to that which has been agitating this country for many years with regard to the public service. The same question is being agitated there. In the subordinate and the provincial ranks we have Indians, in the higher ranks of the service the Indian element is excluded. In the industries of the Country also the same system prevails, and what we want is not that the country should immediately have more skilled operatives,—though it is not a mean thing to be aimed at—but the agitation started by the Indian publicists is not for filling up the lower ranks in the Industrial organisation; but that the Indians

should be trained for the higher services in the Industrial organisation ; and that is exactly the point of view which this Committee seems to have avoided and from that point of view their recommendations cover very limited ground and are very unsatisfactory. Of the many recommendations that the Committee has made, we have singled out one, namely, the suggestion they have made that the Technical Scholarships which the Government of India have been giving for some time past should be curtailed, if not actually abolished. They say " We recommend that students should not be sent to England ".

Our protest is particularly against this recommendation made by the Committee. We have singled out this recommendation alone because of its importance. It reveals to you the whole character of the recommendations they have made. All the recommendations the Committee has made are tainted with the preliminary idea, the Committee seems to have started with, namely, the consideration of the existing avenues of employment that are available to Indians. There are many avenues which could be opened up, if properly trained Indians could come back from abroad provided with the required technical skill. And from that point of view, it is not at all desirable that these scholarships should be abolished at this stage. If the Committee had said that over and above these technical scholarships that are given in the case of those who are to be the pioneers and the directors of Industries, smaller technical scholarships should be given to those, who are in the lower rungs of the ladder of industrial organisation, we would have had no complaint against the recommendation they have made. But the general spirit, animating this enquiry is not what ought to have prompted them ; and I will again repeat to you what Sir Gangadhar Rao Chitnavis has said, " The true object of it in my humble opinion, is and should be, in the present state of the " industrial and commercial development of the country, not so much the supply of existing demands as to attract Indian talents to commerce and industry." We have also to foresee the demands that are to arise in the

future and we have to train our young men as industrialists to occupy the higher rungs of the ladder. The case of industrial organisation is somewhat different from the case of the public service. In the case of the public service, all the employments being in the hands of the Government, we can bring pressure to bear on them to open up the higher posts for Indians. In the case of industries, it is all private capital that is invested. In all these matters, if you do not train Indian industrialists to occupy these positions, the avenues which they can have after providing for their own men would be very limited. There are a large number of these, which if only Government would take care could be opened up. I mean the Railway Service. Higher employments in railways are not open to Indians, and it is to my mind that avenue where we can train Indian industrialists and technical men. Our railways have now become the monopoly of the state and Indians do not get more than the lower subordinate posts. If a proper lift could be given to the Indian element, in course of time these men that would join the Railway service, will later on be the pioneers of many other industries. We have seen many instances of retired Lieutenant Governors becoming directors of companies and industries. We have seen Executive Engineers after retirement from service promoting big companies. We know one such instance in Bombay. Mr. Godbole who is a retired Ex Engineer has started a railway. You must look to this. If Indian technical instruction is to succeed in opening various avenues for employment, it is from that point of view that the recommendations made by the Committee are very inadequate and are all directed to the question how under the present conditions the demands of employers of labour who are mostly Europeans except on the Bombay side should be met. From that point of view these recommendations have been made. From that point of view, it is not the higher operatives, not the Director, manager or Superior officer of the Industrial army that are required, it is only the lower kind of operative. But we have to bear larger interests of the situation in mind. With these words I commend this proposition to your acceptance.

Mr. M. B. Sant in seconding the Resolution said —Mr. President, brother-delegates and gentlemen, the proposition which has been entrusted to me has been ably dealt with by my predecessor and only very few observations are required from me. I must obey the orders of the President and shall say a few words. I must express my complete disappointment at the result that has been achieved by the Committee. It appears that the Committee started with some preconceived notions and instead of satisfying the country's requirements in regard to technical education, they have come to a disheartening conclusion. Instead of promoting technical education they have distinctly made an attempt to discourage it; and not only that but the State scholarships which have been awarded by Government from year to year have been discontinued. It is, therefore, our duty to express our emphatic protest against the action that has been taken by the Committee. With these few observations, I entrust the resolution to your care and I hope it will be carried with acclamation.

The proposition was put to the vote and carried unanimously.

Eleventh Resolution.

Department of Industries in the Provinces

The President —Resolution No 11 will be taken before the rest.

The Hon'ble Mr. Gokuldas K. Parekh in moving the Resolution said —Mr. President and gentlemen, the resolution that has been put into my hands runs as follows —

“ This Conference once more urges that

- (a) There should be in every province of British India, a Department of Industry under a Director of Industries to deal with purely industrial questions and to be in charge of Technical, Commercial as well as Industrial Education in the Province, and that there should be an advisory board of qualified persons not less than one half of whom

should be non-official Indians, who should be consulted on economic questions of importance, that the functions of this department should include (1) the introduction of new or improved methods and processes, (2) the carrying out of investigation and experiments, (3) the development of selected industries, (4) the organisation of Industrial and Commercial Exhibitions

- (*) That there should be an Industrial Museum and bureau of information under the Department of Industry for supply of information and advice to the public on all Industrial and Commercial matters within the Province "

You will see that many of the rigid essentials for all industries will be at hand, if enterprise be at hand. What are the other essentials for the success of industries? This resolution mentions one of the conditions that are essential, that is, that the Government should establish a department of industries and that there should be a Board consisting of a large proportion of Indians for the purpose of advising the Government in connection with those industries. The first portion of the work of the department which we recommend is to give advice in regard to the introduction of new and improved methods and processes. The industries that we propose and we think we can succeed in introducing into our country are those which have been partially introduced and are prevailing in many other countries. In civilised countries the methods of carrying out these industries alter and improve from day to day. The world has gone on improving. In foreign countries improvements are proceeding from day to day. There would be no use of our remaining where we are while others are making progress. It is necessary that there should be bureaus of information for improvements of existing industries and the introduction of new processes in connection with those industries. If we do not introduce them, we cannot thrive and would be kept back in the race of competition. The other thing that is needed is the carrying out of investigation and experiments in most of these industries, which we wish to introduce in this country and which we wish should succeed. One great difficulty is that if you find there is some wrong process, something which requires improvement

there is no man to advise. There are no laboratories and there are no facilities for making experiments. Laboratories should therefore be established and we should be able to ascertain where the defects are by obtaining proper advice and to see the way in which improvements can be made; and therefore industries which depend for their success on chemical and other scientific knowledge cannot be carried on unless we have laboratories and experts making experiments who can advise us from time to time and solve our difficulties.

The other thing that is wanted is the development of selected industries. There are a number of industries. Some of them it would be useless to attempt, being too small or not worth attempting and therefore the best thing is to find out the most suitable industries for advancement and to bestow all our energy and resources on the development of those particular industries. Therefore it is quite necessary that this department should be able to select a few industries.

The last thing is the organization of the Industrial and Commercial Exhibitions. You are aware, gentlemen, that exhibitions play a great part in advancing the industries of other countries. You find patterns and the ways of work and a number of new goods, and if you have Exhibitions the people who go to them will be able to see in what way they can make improvements in their own business. Therefore I think the resolution is a very important one and if the department is established, great progress will be made in industries and I recommend that this proposition be accepted.

Babu Ram Gopal Chowdry said as follows in seconding the Resolution —Mr President and Gentlemen, I happen to belong to a community whose vocation is pure agriculture—the community of landlords. Now, gentlemen, I add my testimony to that of the proposer. Without industry and commerce our country will not be able to support itself for a long time. Whenever there is failure of rain in a single season, we know to what state the country is reduced though it is a fact that a sufficient

amount of food for the maintenance of the country is produced in the land. In countries where no corn is grown, they maintain themselves easily and there is no fear of scarcity or famine there. Then how is it that in India, though we have got so much agriculture and a sufficient amount of produce even in seasons when the rains fail, so many people die of starvation? The thing is we have taken to agriculture alone and simple agriculture cannot support the people. It is therefore essential that we should take not only to agriculture but to commerce and industries as soon as possible. We should also ask the Government to start industries and establish a department of industries in every Province. Of course, His Excellency Lord Curzon opened a new Department of Industries, but that is for Imperial trade. We want a department of industry in every Province of the country. Unless and until that is done, nothing can be achieved. We have got Agricultural Colleges at Sabour and at Cawnpore and we have got the Imperial Institute at Pusa, but they are more agricultural than industrial and commercial. Therefore it is necessary that the Government should take the matter into its own hands and see that every province has an independent department of industry. Let us press on the Government, and press with all the force that we can command that a separate department of industries should be established in the different provinces. With these words I second the resolution.

The resolution was put to the vote and carried unanimously.

The Fifth Resolution.

Polytechnic College

The Hon'ble Babu Dwarakanath proposed the fifth resolution which was as follows and in doing so made a very eloquent speech in Hindi —

“While expressing its appreciation and thankfulness to the Government for the liberal action taken and contemplated, in

regard to Technical education, this conference once more records its firm conviction that for placing the cause of industrial progress on a firm basis, it is most necessary that the Government should establish in the country at least one fully-equipped Polytechnic College for imparting the highest kind of instruction in the applied sciences and industries ”

Mr. M. S Sinha seconded the resolution in Hindi. The resolution was put to the vote and carried unanimously.

Sixth Resolution

Technical Education.

Moulvi Muhammad Hussain Sahib in proposing the Resolution said —Mr President and Gentlemen, The resolution which I have been called upon to propose is one which materially concerns the welfare of India. It cannot be gain-said that this is a matter upon which to a great extent the future of the country depends. The resolution which I have been called upon to propose is as follows —

“This conference urges all Provincial Governments and administrations, Rulers of Indian States, as well as Principals and Superintendents of Private or Aided Schools and Colleges, to add Commercial, Technical and Industrial classes for instruction in commercial subjects as well as in weaving, dyeing, sheet-metal working, smithy, carpentry etc., to the existing courses of instruction, wherever practicable to afford facilities to boys of all communities to learn useful industries as a means of their livelihood.”

This is a resolution which ought to be heartily supported Gentlemen, you are well aware of what other countries have done and what they are doing on the strength of their industrial institutions. Industry is a matter in which India is lagging far behind other countries. And it is a matter which with proper agitation will, we are sure, receive the cordial support of the Government and of the Native States

Mr. C. B. Sahay.—Mr. President and Gentlemen, The resolution which has been so ably moved by my friend Moulvi M. Hussain does not require many words from me to commend it to your acceptance. Technical education is a most pressing need of the country. We have been passing resolution after resolution every year and we have also been doing something in that direction, but not in this part of the country. Bombay is still leading the way. The people there have started Technical schools and they have also started Mills, so that by giving education to their boys they give them also the means of livelihood. But in our part of the country, supposing the boys do not take to industrial education, I do not know what their fate will be. I have myself seen a graduate in Engineering begging from door to door for anything that we could give him. He could not even earn his livelihood. His degree could not get him that. Therefore it is time that we should ask the Government to give facilities for Technical training and I ask our Chiefs here and the Maharajahs to start factories and mills and give facilities to students to specialise in some subjects. I shall take one subject only, the subject of agriculture. India is an agricultural country. Seventy-five per cent of the population live on agriculture. We are tilling the soil in the way in which our fore fathers did. We are sowing in the same way that they did. We use the same manure as they did. The soil is over-burdened and does not yield what it did a few years ago. We have got an agricultural school in Sabour, but students from this part of the country do not attend it in large numbers. And why?—because they see no prospect before them. There is no prospect for them when they come back after passing through their course there. There are no experimental farms. Not a single Raja or Maharajah is going to place a thousand acres or farms to work upon and the gentlemen who go there for education not only lose their health but contract debts also. I do not believe in always asking the Government for this thing or that thing. I believe more in our own efforts. We must make self-sacrifices and if we can stand on our own legs the Government will help us to advance further.

This Resolution includes smithy carpentry, and other small-works. We have not got technical colleges or schools and it is impossible for us to have instruction in these subjects in an Arts School. Even if the Principal wants to do it, he is powerless. But we can open small workshops, ordinary smithies and carpentry works in every village if only our people wake up. Weaving had been a flourishing art in our part of the country and is now dying. Thousands of families are still going on with handlooms in the province of Behar. From this platform, I appeal to the Government and to the people to start handloom weaving factories in Behar, where there are thousands of people weaving their own coarse cloths, who, if they are properly trained and provided with capital will, I am sure, turn out better material also. It was our privilege in the middle ages to decorate drawing halls of England and other places with tapestries from Agra. What is our condition now? It is just the reverse. If we go to any decent drawing room, we find that every article there has been imported from Japan, England or Germany. Why has it come to this? Because we have not been able to give technical education and to produce men here, who can give their time to the weaving industry. We have been able to produce in India the best orators and the finest Judges; but still our country has not given birth even to one man who can stand comparison with some of the catpains of industry in England and other countries we are certainly not lacking in that capacity, as Bengal has been sending students every year to other countries—America, Germany and England who have turned out graduates equal to the best foreign graduates. The only thing which we require is stimulus and it has not been given to us. I again appeal from this platform to the Government not only to start schools and colleges, but at the same time I ask you, gentlemen, to decide to form associations for the advancement of scientific, and technical education as they have done in Bengal and as they are doing in other parts of the country. In Behar we have failed. We tried once but we have not done anything. Why?—because the people here do more talking than practical work.

I appeal to my Behar brethren here to take up the cause of technical education in right earnest and try to advance once more, and to revive the Industrial associations which they had formed a few years ago and to send out students to foreign countries, as well as to give them scholarships to study in the Colleges here, in Bombay, Poona and other places. With these few words, I commend the resolution to your acceptance.

Mr. Kane — Mr President and gentlemen, the resolution that has been put before you contains two things first of all to give Technical education, Commercial education and Industrial education to your children in schools When you have established Technical Colleges, you must have small children educated in small arts Unless you teach weaving in some small measure, unless you teach dyeing in small measure, unless you teach tailoring, carpentry or smithy in some sma'l measure to the children, when they are beginning to learn their A.B.C. till they have completed their elementary education, you will not be able to send them to the Colleges. There in America education is given with two objects, to make the children good citizens and to make them able to earn their livelihood But in India education is more literary than practical. All people who become B As will not be able to get Government service. Therefore you must give boys and girls such education as will enable them to earn their livelihood. If you teach a small child of 10 years how to use carpenter's tools or smith's tools or to dye papers that you have seen here in this hall or to dye small cloths that are prepared and put up here, you will teach them how to earn their livelihood The object of education must be to teach children to become good citizens able to earn their livelihood Jewish children were taught two professions and they live well in the world, because if one profession failed they could take to the other. This ought to be the object of education. Industrial education means education to carry on technical industries. Technical education means education to work on raw materials, and commercial education means the knowledge of the art of buying and selling with profit to the

buyer or the seller. Our Emperor has told us to educate, to unite, and then to hope. When you have learnt small industries and are able to earn your food, then only you will be able to unite together and if you are able to unite together by education, then you can hope to make this country a great and glorious one (cheers).

Mr. Harkare —Gentlemen, The resolution which I am called upon to support is the one that has already been read to you by the proposer and the seconder, so the only thing I have to say in respect of it is this we have already numerous technical schools in India and we have only to revive them Yesterday in the All India Hindu Religious Conference we passed a resolution on education an omnibus resolution on education, generally, which includes technical education as well. It should be given by an expert and not by a layman. He must be an expert in the trade he teaches and must follow the profession he teaches You have to take also the help of the religious forces in India. That will revive this sort of technical education. With these few words I commend this resolution to your acceptance.

The resolution was put to the vote and carried.

Seventh Resolution.

Failure of Industrial Enterprises.

Professor Jadunath Sarcar —Mr. President and gentlemen, the resolution that has been entrusted to me runs as follows.—

“This Conference notes with regret and concern the failure of several industrial enterprises started for carrying on new industries and the effect these failures have produced in damping the ardour of the people in the development of the resources of

the country. The Conference calls upon the leaders of the people in the different Provinces and Districts to institute inquiries into the causes of these failures and to communicate to the General Secretary the results of their inquiries, and authorises the General Secretary to depute one or more persons for conducting this investigation, if the funds, at his disposal, permit ”

It is an unfortunate fact that according to the calculations made about 20 years ago 75 o/o of the Joint Stock companies started in India had failed. This is to be greatly deplored, first because ours is a poor country, probably the poorest that has received modern education, and secondly we have started very recently on an industrial career on modern lines and we cannot therefore afford to lose our capital nor could we afford to be discouraged. An enquiry into the circumstances that have led to the failure of so many industrial concerns recently started in India is supremely necessary for the education of the investors. Unless the investor is properly educated, he will be shy to invest in future. Secondly, if we do not point out the mistakes of our predecessors, we shall not be able to follow the right path. The resolution, therefore, will commend itself to all reasonable men. Some people run away with the conclusion that our people are more dishonest than other nations, for they urge there would not otherwise have been so many failures. But as a matter of fact there have been failures of Industrial concerns in other countries too. Particularly in Europe every commercial boom is followed by a crisis. As I told you at the beginning, we cannot afford to lose even a portion of our capital which European countries lose when periodical commercial booms are followed by commercial crisis. Our people are not more dishonest individually than the people of other countries. Possibly as commercialism is a new growth in our land, collective morality is not so advanced here as in other countries. That is to say, certain virtues which are at the root of commercial success such as punctuality, method of organisation and so on are wanting among us. I look to time to cure these evils. Another set of people urge that our people have an inherent incapacity for conducting industries. We have only-

to look to the success of several industries in different provinces of India to conclude that this assertion is not true. Incapacity may be due to absence of technical knowledge for which a remedy has also been proposed. It may be due to lack of business habits. But this evil will certainly be cured, if you proceed from small industries to large ones. It is the man who has succeeded in one thing that can succeed in another. Thirdly, it may be due to laziness in studying the situation of commercial problems in all their bearings and this I will briefly touch afterwards.

Education of the investors is supremely necessary. The proposal which is made by me just now, urges upon the leaders in the various provinces to institute enquiries and place the result of those enquiries at the disposal of the public. Secondly, it empowers the General Secretary of the Industrial Conference to depute people to make inquiries on the spot into the actual circumstances that have led to the failure of the local industries and afterwards to publish the results of the local investigations. The method of enquiry to my mind should be on the following lines. First, whether the home training of the people encourages habits of punctuality, order and the love of keeping everything in its proper place. For instance, we generally have the habit of mixing up our home affairs and our business concerns. That ought to be carefully avoided. Secondly, so far as I can judge, we do not attach so much importance to account-keeping and periodical auditing as every European firm, even the poorest, does. We sometimes follow a penny-wise and pound-foolish policy of putting off the duty of stock-taking. We should not think that we lose sales on the days on which we have to do our stock-taking. Account books should be strictly maintained and periodical auditing and stock-taking should be insisted on once in six months or at least once a year. A cheeseparing policy should be avoided. Our investors will be able to see where they stand. Thirdly, full publicity should be given to the result of the stock-taking. If that is not done, there may be reason to suspect fraud. Fourthly, as soon

as a new project is started it is the duty of the press to critically examine it with the aid of experts. As soon as an industrial undertaking is started, as usual the papers set up a chorus of applause in the sacred name of Swadeshi. The result is that an immature project fails and it discourages people from investing public capital on such businesses. Therefore, superior knowledge on the part of the people especially the leaders of the people will lead to the elimination of unsuitable projects in the beginning. The process to be followed should be carefully examined, the distance of the factory from the place of origin of the raw materials should be carefully examined and the existence of possible competitors in the locality should be taken into consideration. If the company fails after these things have been considered, then there must be a different cause.

Again the enquirers ought to consider whether the projectors have followed the principle that the direction of industries requires special ability and great physical activity. It cannot be left entirely in the hands of people, who have retired from Government service on the ground of superannuation; nor can it be left in the hands of busy lawyers, patriotic men no doubt, but who cannot devote enough time to such projects. Industries must be directed by people, who make it their sole concern. Lastly, we ought to consider whether the standard of commercial morality has been sufficiently reached. In England, the Right Hon'ble Sir John Dillon, had to put a stop to his political career, because the firm of which he was a member failed through the dishonesty of one of its subordinates, though his personal integrity was never called into question. A similar fate overtook Lord Dufferin towards the end of his long and prosperous career. We ought to see that a similar rigid standard of commercial morality is insisted on. If a public man, who acts as a director of a company does not personally look after it, and the company fails, that ought to put a stop to his public career in future. These, to my mind, ought to be the lines on which the enquiry should be conducted. But when I propose this investigation

I do it not in a spirit of despondency in regard to the future of the country, but because by an observation of the mistakes of our predecessors, we shall see where they stumbled, so that we shall be able to learn to walk erect. Nations no less than individuals may rise on the step stones of their dead selves to higher things. (Cheers.) The knowledge which this investigation will place before you will enable you to avoid the pitfalls which have ruined our predecessors. I therefore commend this resolution to your favourable consideration. (Cheers.)

Mr. Ram Narayan Prasad —I have been asked to second the resolution. You have read the report of the General Secretary and from that you learn that there were several failures and that he proposed to start an enquiry as to the cause of these failures, but for want of funds he was unable to carry out this business which was entrusted to him. Now in this resolution also we find in the last portion that the enquiry is entrusted to our leaders in the Provinces, but the Secretary will also have to depute one or more persons for conducting these investigations, if the funds at his disposal will permit. Now, gentlemen, for making these enquires it is absolutely necessary to depute men, and unless the Secretary will have funds in his hands, it will be rather difficult for him to carry out this work. And unless the causes of the failures are ascertained and made public, you cannot avoid similar failures in the future with regard to new companies. So it is absolutely necessary to find out those faults on account of which the companies have failed and lay these causes before the public, so that the future companies and projects may not share the same fate. With these remarks, I second the proposition that it is absolutely necessary that such an enquiry ought to be made.

Mr. K. P. Sen Sinha .- Mr. President and gentlemen, it is with mixed feelings that I rise to support this resolution. Just now you have heard the very able speech of Professor Jadunath Sainkar on this subject, and it is quite superfluous for me to say anything regarding the causes of these failures. Yet I

would attempt to make a few observations on this subject. The first cause which appears to my mind is want of skilled and educated labour. The labourers are ignorant ; the labourers have got very bad habits ; they are addicted to drunkenness. They do not know how to spend the money they earn and that is one of the reasons why these industries have so often failed. Then there is lack of discipline and character. The third reason is the want of business capacity in those gentlemen, who started these Mills and other concerns. Here I would pause for a moment and make a reference to the Mill started in Bengal. When Swadeshi enthusiasm was running high, our Bengal friends started several Mills in their Province, but all these Mills failed, only because that enthusiasm was short-lived. They wanted to make Swadeshi a political not an economic weapon but let me assure you that if Mills are started based on lines laid down by those great Indian economists, Mr Mahadev Govind Ranade and Mr Telang, I think these mills are bound to succeed. The chief obstacle to India's industrial development is the divorce between brain and muscle. Then there is lack of teachers and genuine students. Here you have got Industrial Colleges—very few in number indeed, but even in these Industrial Colleges it is a matter of very great shame that Indian teachers are practically very few, I should say almost none. European teachers no doubt who have come to India give lessons to Indian students on these subjects, but they suffer from the disadvantage of ignorance of the vernaculars. The European teachers who come here can give lessons to the students in English, but many of the Indian students especially the labourers and the masses, cannot follow what they say. Before I finish I must appeal to your sentiment. The Swadeshi spirit which ran so high in Bengal ought to be kept up also. 'Swadeshi' a certain gentleman said, 'was bound to be a failure' Why ? Because Swadeshi was not carried on in a proper spirit, in a business-like way. The Swadeshi movement ought also to be preserved, because it is necessary for the success of these industries, that you should be patriotic and should suffer certain losses and purchase goods

produced in your own country even [at a sacrifice. But for the masses you cannot appeal to them in the name of patriotism, because they are yet ignorant and know very little of patriotism. Therefore, the essential things required for the industrial development of the country are, mass education, production of cheap goods and also production of teachers in this country. Gentlemen, I do not like to detain you any further. The appeal has gone and I hope all of you who have come here will make it a point to try for the industrial development of your country as there can be no political regeneration without industrial development (Cheers)

The resolution was put to the vote and carried unanimously.

Rai Purnendu Narayan Sinha :—For the convenience of the delegates I would propose that all the remaining resolutions be put from the chair.

The President There are certain resolutions which could be put from the chair. Let us take them first.

Eighth Resolution.

Handloom Weaving.

The President:—I will first take resolution No 8 which is as follows :—

“ This Conference specially invites the attention of the capitalists to the great and urgent necessity of improving the existing condition of the weaving industry by the introduction of labour—saving hand-loom and other devices of approved patterns, in important centres of the Hand-loom weaving industry, with the co-operation of the weaving classes.”

No speeches are required. You understand the resolution and if you approve of it, hold up your hands.

The resolution was unanimously carried.

Ninth Resolution

Railway Rates. .

The President :—The next is resolution No. 9.

“ This Conference once more calls the attention of the Government to the prevailing complaints about the anomalous character of the existing Railway rates on goods and their prejudicial effect on interprovincial trade and urges the necessity of laying down for interprovincial consignments the same scales of rates as those for consignments to and from important ports.”

The resolution was unanimously carried.

Tenth Resolution.

Faculty of Commerce.

The President :—The next resolution is as regards the Faculty of Commerce.

“ This Conference records its sense of gratitude to the Government of Bombay for having created a Faculty of Commerce and urges the Local Governments and the other Universities in India to follow the example of the Bombay University in establishing Faculties of commerce for giving an impetus to Commercial Education.”

This is also a simple resolution, if you approve of it, please raise your hands.

The resolution was unanimously carried.

Twelfth Resolution.

Co-operative Banks

Rai Purnendu Narayan Sinha :—The resolution which I have to move runs as follows :—

“ This Conference once more welcomes the establishment in the Bombay Presidency of a Central Co-operative Bank and urges upon the Government and the people of other Provinces the need of establishing similar Banks to help the existing Co-operative Credit Societies for advancing loans at reasonable rates and on easy terms to the agriculturists.”

I think that there is no movement calculated so much to improve the economic condition of the people than co-operation. I believe more in co operation than in protection. Whether I am right or wrong, before we have protection, we must seek co-operation. Co-operative Credit Societies affect our rural classes also and to some extent our small industries. Those who have anything to do with these Co operative Credit Societies know how difficult it is to get Central Banks to finance them. My friend Mr. Mo-hi uddin Sahib, personal assistant to the Registrar of Co-operative Societies who read the paper on these Societies did not give his experience on this point, but I know we feel great difficulty in finding a Bank to finance those Credit Societies which have been started. We had correspondence with the Bank of Bengal for a year but without success. We have not succeeded with the Benares Bank to get loans at an interest of 8 %. That will serve the purposes of Behar for the time being. It is a practical difficulty and the Central Co-operative Credit Bank of Bombay is just the thing, which we want in all the Provinces. This resolution refers to the most important measure for the economic progress of our land and I commend it to your acceptance.

Mr L. V. Kaikini.—The Central Co-operative Bank of the Province represents the source from which we have to tap the capital which is absolutely necessary for improving the lot of the village agriculturists and cultivators. It is something like a channel. The Presidency Bank lends money to the Central Bank and the Central Bank lends them out to the village banks at interest and they lend out money to individual members. Thus the money reaches the individual ryots and the cultivators. In this resolution, reference is made to the

Provincial Bank started in Bombay, but I may add that a Provincial Bank also has been started in the Central, Provinces in Nagpur to promote Co operation in that Province. Therefore it is absolutely necessary that in every Province where co-operation has made some progress, an institution on these lines with necessary alterations according to local conditions, should be started. With these words, I second the resolution.

Mr. Panday Narayan Singh —As the time is getting on I am not going to inflict a speech on you. What I want to bring home to your minds is that, if you will consider the subject thoroughly, you will understand the difficulties that arise in places where there are no Co-operative Societies. And if the Co-operative Societies are to be useful you must have a Central Bank whence you may get good help. You know the rural societies depend entirely, or rather largely, on the Central Society. From the latest figures it appears that less than half of the working capital is advanced by the Government, the remaining half is derived from such sources as share-holders, depositors or other persons who pay to these Societies. Therefore from this it appears that Central Banks are important and unless you start a Central Bank in all the different important places, I do not think these Rural Societies will do any substantial good. With these few words, I commend the resolution.

The resolution was put to the vote and carried.

Fourteenth Resolution.

Co-operative Credit Societies.

Mr. G. K. Devadhar —Mr. President, Ladies and Gentlemen. The resolution that is entrusted to my care reads thus. —

This Conference expresses its great satisfaction at the progress which Co-operative Credit has made in this country since the passing of the Co-operative Credit Societies' Act of

1904, and earnestly hopes that with the wider application of the principle of Co operation under the Co-operative Societies' Act of 1912, Government will give larger financial and administrative facilities which are needed to secure a surer growth of Co-operation and exhorts the educated public to strenuously extend its operations to various branches of agriculture and small industries which are bound to prosper with the help of the movement of Co-operation.

Gentlemen, as it is getting very late, I must be very brief and therefore I shall touch only on a few points which have been embodied in this resolution for your favourable consideration. Those of you who are acquainted with the economic forces that are more or less revolutionising the social and industrial conditions of most of the western countries will bear me out when I say that Co operation, this large movement of co-operation, has proved a great building factor. Speaking from the economic and the moral, social and other points of view, it has really been the resurrection of India during the last eight years, since the passing of the Co-operative Credit Societies' Act of 1904. We too have great reason to be proud that it has worked a very substantial progress in the direction of energising some of our agricultural classes. You all know that this movement was originally started by Lord Curzon by the passing of that Act, though feeble attempts were made in the direction long before that. During these 8 years we have now above 8177 Societies. I have taken these figures from the recent reports that have been issued by the Conference which met at Simla last October. And the membership of these Societies is 43000. I believe the capital which has been disbursed by these Co-operative Credit Societies exceeds three crores of Rupees. It is 3 075,00,000 out of which only 9 lakhs have come from the Government and the total disbursements amount to Rs. 443,00,000. You will be glad to know that a couple of years ago the number of Societies was half. By the end of last year it came to something like 6,000 and during the last year, more than 2 thousand societies have been added. The membership has

been doubled, the amount of capital available for the various industries and specially for agricultural co-operation has also been nearly doubled. If this rate of progress is kept up, surely during the next few years, we shall easily have ten thousand societies. Now what I want principally to lay stress on is that this principle of co-operation is recognised by the existing Act which not only makes it possible to have Co-operative Credit Societies ; but the operation of the principle of co-operation is to be extended and the Government are prepared to register Societies that come into existence not only for the sake of credit but also for other purposes, such as, agriculture, commerce and industries which could be built upon co-operation. And for this, an Act has been passed this year and it is very necessary for us to take advantage of the principle and the facilities of the Act and extend co-operation in the various branches of Industrial and Economic activities. The third point, with which I have to deal is that Government ought to give us larger financial and administrative facilities. Those of you who are conversant with the progress and advance which these Societies are making in the various Provinces will easily recognise that the Department of the Co-operative Registrar is not so fully and efficiently manned as it ought to be, to keep pace with the growth of this movement. I do not know the experience in Behar, but I am sure in the Central Provinces, the Registrar of Co-operative Credit Societies, Mr. Crosthwaite is not able to register more Societies because, he says his staff is not able to supervise the work of auditing the accounts. Similarly, in Bombay and so also in Madras. In this connection, I had to read a paper before the Bombay Provincial Conference emphasising the necessity for further State-aid in the matter of the development of Co-operation. Then also we want to have financial assistance. Our friend who moved the last proposition has told you how the Registrar found it difficult to get the necessary capital for the Societies, and therefore, unless you have a Central Bank, the Government should give some money to these small Societies. But whatever interest the Government might show, and what-

ever assistance the Government might give, the movement cannot surely make any headway worth the name, unless the educated people recognize that it is their duty and responsibility to help the institution. But it is really a very sad feature of the history of this movement that the educated classes in the country have not really shown as much interest and earnestness with regard to its progress and development as they ought to; and those of you who are sincerely earnest about the all-side growth of the masses of the people cannot do better than to interest your selves in co-operative work and if you can study the great, and marvellous results which this Co-operative movement has achieved in Western countries, I am sure you will recognize that it is the most patriotic, national and sacred work that you can be called upon to do in the name of your country (Cheers) I must say that this will be largely useful to agriculture. There is a book which has been recently published this year by Mr Woulf, who is a high authority on agriculture called "Co-operation in Agriculture", and if you have time kindly go through that book and you will see what great changes have been effected in agriculture in other countries. In fact in a country like Denmark, there is no person who is not a member of a Co-operative Credit Society and there are some, who are members of nine or ten Co-operative Credit Societies, because the principle of Co-operation has made easy the development of the agricultural industry. Similarly you can speak of small industries also. In one country, Germany, by means of the movement of Co-operation, by means of 25,000 or 26,000 Co-operative institutions, more than six hundred crores of rupees are made to fructify and run into the channels of industrial and agricultural improvement. If you, therefore, see the great potentiality of this movement in advancing the economic industrial and agricultural interests of our country, and more especially in increasing the administrative capacity of the people, I believe you will lend your support, and make up your mind to interest yourselves in this movement, read its literature, understand the principle and engage yourself in the work and contribute to the success of this movement. When

the next Industrial Conference is held, I hope there will be more societies started with the assistance and the real co-operation of the educated classes in all the Provinces. With these words, I commend this proposition to your enthusiastic acceptance.

Mr. R. V. Mahajan — Mr. President and gentlemen, I will be very brief in my remarks and in making those remarks I will try to give you some experience from my own Province. I come from Berar and the Central Provinces, and the number of Credit Societies which have been registered so far is nearly 839 and the Registrar, as already pointed out by my friend, Mr. Devadhar refuses to register certain societies because he has not got a sufficiently large number of assistants. I will also give another experience. Although the Act says that there would be free auditing of the accounts of village societies, still in the Central Provinces we find that the number of auditors engaged by the Government is not sufficient to audit the accounts of the Societies that have been already registered; and although the Act says that there should be free auditing, proposals have been made by the Registrar for asking the Central Banks to take a certain loan from the Government, so that there should be a sinking fund and the interest from that fund should be devoted to defray the auditing charges. So I submit that in view of these circumstances, it is necessary for us to ask the Government to be more liberal and to extend the operation of the Act. Then moreover, what I have to submit is that this resolution requires the Government as well as the people to take more interest in the cause of co-operation and it is not only in the cause of co-operative Credit that the work can be done, for under the new Act our work can be extended in other directions also; and an attempt has been already made in several Provinces in that direction. For instance, in Berar an attempt has been made for popularising the cultivation of Russian cotton and also in certain districts of the Central Provinces an attempt is made to popularise a superior variety of wheat seed. To encourage these attempts the Government has recently sanctioned the appointment of an extra Assistant

Commissioner and he is asked to establish unions in several parts of the province. It is necessary that the educated men also should take keen interest; and unless the educated people shake off their indifference and try to take interest in this subject, the work cannot be done by official agency alone. Non-officials and officials must co-operate in this matter and we can only hope for success when there is this co-operation. The results of this co-operation have been already dwelt upon by the previous speakers and also by the gentleman from Behar who gave you the history of co-operation in his Province. For my own Province, I may say that this work is very much liked by the Mahars. Although no special work is done for the depressed classes, work on the lines of the co-operative movement will do a great deal for this class. In Berar the cultivators could get no loans unless they were prepared to pay interest at 2 to 3 % per mensem, now they are able to get them at the rate of 1 per cent. and they are the persons who appreciate the work of the non-officials and the officials. So in view of these circumstances, I urge that the educated classes ought to shake off their indifference and take more real interest in the cause of the co-operative movement. When this interest is taken you can hope for the regeneration of India. With these few remarks, I second the resolution.

The resolution was put to the vote and carried.

Thirteenth Resolution.

Previous Resolutions.

Mr. Mathuranath Sinha :—Mr President and gentlemen, I have been selected to move this resolution perhaps because I am rather weighty and this resolution which is an omnibus resolution is supposed to require a weighty man to move it. This resolution is a combination of five resolutions and runs as follows :—

“This Conference confirms the resolutions passed in previous years :—

- (1) Calling upon the Government and the people (a) to encourage and help Indian manufactures and (b) to foster and encourage the use of such manufactures ;
- (2) Recommending to the people the desirability of starting Funds for the promotion of Technical and Industrial Education ;
- (3) Inviting the attention of capitalists in India to the urgent need of developing and fully utilising the mineral resources of the country and asking them to make organised efforts in that direction ;
- (4) Urging upon the attention of the Imperial Government the special claim to consideration of the Textile and Sugar Industries ; and praying for the repeal of the excise duty on Cotton goods ;
- 5) Urging the desirability of the standardisation and unification of Weights and Measures so as to remove the serious inconveniences caused to trade by their multiplicity."

Gentlemen, I have only to say one or two words in connection with this. In connection with the last resolution you will find that the name of the Maharajah of Darbhanga is associated with it. You will find in the previous reports that he moved in the matter. There are several inconveniences to trade because there are no standard measures and weights throughout India. For instance, in dealing with cotton, you find that one maund is equal to 40 seers in some places. It is only 30 seers in some places and in other places only 14 seers. So if you go to make a bargain not knowing the actual standard of weight there, all your calculations are likely to be upset. Then with regard to oil, one maund is in some places equal to 34 lbs., in other places it is 31 lbs. The Lieut. Governor of the Punjab, Sir Louis Dane talking on the standardisation of the seer, says that not only will India be benefited by it but trade will be given an impetus as one seer is

the measure of one French kilogramme. This kilogramme is equal to one thousand grammes which Sir Louis Dane says almost comes to the weight of one standard seer. So even foreigners have come to understand that weights and measurements will benefit by a common standard. The Maharajah of Darbhanga suggests that a committee should be formed in order to take some effective steps and to make suggestions as to how this can be carried out. A committee was formed and some suggestions were invited; some of them were favourable and some were not. It is necessary for us to ask the Government to have this resolution carried out in the light of further suggestions so that we might have standard weights and measures.

There are one or two things more. First import duties. We wish that Government should impose import duty on foreign sugar in order to enable the indigenous industry to hold its own. You know that in most of these Provinces sugar industry is carried on to a great extent but it is handicapped by the importation of cheap sugar from foreign countries. If we get some assistance from the Government and some duty is imposed, our industry will succeed better. Then, there is the excise duty—we want to protest against the continuance of this excise duty on cotton goods. Its imposition on cotton-mill made cloth is unjust and unnecessary and presses heavily on the industries in the Bombay Presidency and we pray that it should be abolished. You know that the Government proposed a tariff of $3\frac{1}{2}$ per cent on certain cotton goods. They did it for the purpose of revenue. Lancashire found in that case their articles would not sell well. There was a big agitation and you know what that agitation means. It is not a paper agitation like ours. It means the turning out of the Ministry,—turning out of the cabinet. So their agitation must be more closely attended to than ours and the result was that the Home Government pressed upon the Indian Government. To the credit of the Indian Government it must be said—you must be grateful to them—that they raised their voice of protest against this mandate from Home and they said that this tariff should be raised here and that they would not listen to Lancashire. But

the Home Government which is more influenced by the feelings of Lancashire than of the people of India sent an official mandate to the Government of India and the Government of India had to obey. We should strengthen the hands of the Government of India and urge again that this unjust impost should be abolished. No amount of vain talk about "free trade" can convince us as to the necessity of having that sort of imposition. Even in France, Germany, Japan, men who have independent self-government do not care for this almost exploded theory of free-trade. A foreign Government which is so powerful and which seeks the happiness, the contentment and the industrial amelioration of the people of this country must see that this sort of thing does not continue.

About the other matters, I need not say anything further. The first resolution speaks for itself. It calls upon the Government and the people to encourage and help Indian manufactures. I think we have been doing this several times at our Industrial Conferences. The whole of the Industrial Conference report is full of it. Our President's appeal is also there and you understand the position. As regards the appeal to the people it has been made to you by several speakers here to open Co-operative Banks and combine together to help indigenous industries by purchasing locally made articles. It is necessary only to add, and perhaps you will all agree with me, in regard to this, there is not a single question of special electorate, no special seal of sanction, no preferential treatment. In the wide and luxuriant vine-yard of the Government, to which every one will be able to have access to pluck luscious fruits, if he will only stretch out his hand. No doubt we must always remember that our roads are not always strewn with roses, sometimes they are strewn with thorns; and, as Professor Jadunath Sircar has told you, sometimes we have to pass through failures but there should not be discouragement. Failures there must be. We have to pick up experience at every step. Even in great European countries, which have achieved so many great things, you do not know what failures

they had to pass through in the past in order to achieve that great success which so bewilders us (Cheers). Gentlemen, we should be prepared of course with fuller knowledge concerning facts. The very fact that you are going to enter the lists will result in minimising the chances of failure

Mr. Laht :—I have to speak a few words only in connection with the second clause, which is the only new clause “recommending to the people the desirability of starting funds for the promotion of Technical and Industrial education”. This proposal has for its object the creation of new industries in this country. We all feel a great many difficulties in starting new industries. They are mainly two. The first difficulty is want of expert scientific knowledge and expert workmen, the second is want of money for experimental work. Now for the first difficulty we have funds in the several Provinces. For the other we want funds. We have also recommended, and we have urged on the Government in the second sub-clause of clause A, of the 11th resolution, the carrying out of investigation and experiments; and in resolution V we ask them to establish technical colleges. Now what this clause proposes is that we should not sit silent, because we have asked the Government. We ought to stir ourselves and organize funds. One more thing which I have to say is about the quality of the education to be given. The education should not be given only from the point of view of art but it should be given from the industrial point of view, by which I mean that students should be given opportunities of practising in the factories sufficiently long so that as soon as they leave the factory, they can do practical work and attract capital.

The resolution was put to the vote and carried unanimously.

Fifteenth Resolution.

Sir T. Palit's Endowment.

The President —The next resolution will be put from the chair. This is a very simple resolution, but a very pleasing one. The resolution is as follows:—

Sir T. Palit's Gift.

“ This Conference places on record its sense of gratitude to Sir T. Palit of Calcutta for his munificent gift to the Calcutta University and expresses the hope that his example would be followed by others.”

(Moved from the Chair.)

The resolution was carried unanimously.

Sixteenth Resolution.

OFFICE BEARERS.

‘ The Hon’ble Babu Krishna Sahay :—Gentlemen, this is a formal resolution dealing with the appointment of Office bearers and a Standing Committee to carry on the work of the Industrial Conference during the forthcoming year. The resolution runs thus:—

“ The Honourable Rao Bahadur R. N. Mudholkar be appointed General Secretary of the Indian Industrial Conference for the next year. Mr. N. A. Dravid, Honorary Assistant Secretary and Mr. M. B. Sant, Assistant Secretary and this Conference appeals to the public for a sum of Rs. 8000/- to carry on the work of the Industrial Conference.”

It is the duty of every one of us, if we care for the development of the industries of our country to put our hands into our pockets and subscribe as much as possible for the success of the industries. I dare say that Rs. 8,000 is an absolutely insignificant sum taking into consideration the vast amount of good to which this sum will be put. They have put a very modest sum of Rs. 8,000 and it should not be difficult to raise that sum in a country like ours. Surely we can raise at any rate 8,000 rupees. This Conference also deems it desirable that there should be a Standing Committee appointed for each year to co-operate with the General Secretary in carrying on the work of his office

during the year and to advise him on all such matters as he may submit to them and that the following gentlemen do constitute the Standing Committee for the year 1913:—

Sir R. N. Mookerji.

Lala Harkishan Lal.

Mr. J. Chaudhari.

Sir Vithaldas D. Thackersey.

Mr. D. E. Wacha.

Hon'ble Mr. Lalubhai Samaldas.

Diwan Bahadur P. Rajarathna Mudaliyar.

Dr Satischandra Banerjee.

Mr. C. Y. Chintamani.

Rai Purnendu Narayan Sinha Bahadur.

Hon'ble Mr. M. B. Dadabhoy.

The Hon'ble Babu Krishna Sahay

Hon'ble Rao Bahadur R. N. Mudholkar (*Ex-officio*).

The name of Mr. Hassan Imam is mentioned here. It was put in last year, when he was a free man. But now that he is an official his name is to be omitted. This is only a formal resolution and I do not think it necessary to make any speech.

Mr. Jogindranath Sammaddar:—The resolution which has been so ably moved by the Hon'ble Babu Krishna Sahay needs no words to support or to second it. As you know the resolution can be divided into three parts. First the appointment of the Office bearers, secondly the question of money, and thirdly a Standing Committee to carry on the work of the Conference. As regards the Office bearers, the Hon'ble Rao Bahadur R. N.

Mudholker is proposed to be appointed the General Secretary of the Indian Industrial Conference. His name is a household word in India and he has been elected this year to the Presidency of the Indian National Congress and I think it has been justly said that it is the highest honour which an Indian can aspire to. (Cheers) Mr. Mudholkar is the life and soul of this Industrial Conference. It is to him and to him only that this Conference owes its very existence. I am quite sure that you will all carry with acclamation that the Hon'ble Rao Bahadur R. N. Mudholkar be appointed General Secretary of the Indian Industrial Conference. (Cheers)

Mr. Dravid has been acting as honorary Assistant Secretary and he is also doing useful work. Then Mr. Sant is to be the permanent Assistant Secretary. He is the only whole time man to do the work of the Conference. I know full well the work he has been doing with great zeal and enthusiasm I therefore propose that Mr. Dravid be the Honorary Assistant Secretary and Mr. Sant be the Assistant Secretary.

As regards the question of funds, you all know that nothing can go on without funds or as they call it, the sinews of war. I earnestly appeal to you to contribute as much as you can afford to spare. It has been repeatedly stated and brought home to our minds, that the first thing which India requires is her industrial regeneration The Indian Industrial Conference has been able to do something in this direction (Cheers). It has earned the approbation and the sympathy of Government as well as the active co-operation of the people and it is our earnest desire and our sacred duty that we should all help it as much as possible.

Then there is the question of the appointment of a Standing Committee. You have here all the names so familiar to you. Sir R N Mukerjee is the senior partner of the well-known firm of Messrs. Martin & Co. Those of you who belong to Behar know the Behar Bakthepur Railway If you make an estimate of him from that Railway, you will make

a bad estimate. (Laughter). It is the only Indian firm which is a competitor of European firms and Sir R. N. Mukerji is associated with it. Lala Harkishan Lal, our worthy President combines in himself qualities of head and heart. Then comes the name of Mr. J. Chaudhri of Calcutta. Sir Vithaldas D. Thackersey is a very eminent man of Bombay. Mr. D. E. Wacha is present here and he is one of the General Secretaries of the Indian National Congress. Mr. Lalubhai Samaldas, Mr. P. Rajarathna Mudaliar—these are familiar names Mr. C. Y. Chintamani, the able editor of the Leader, is a man of whom I can confidently say that has got an old head on young shoulders. Then occurs the name of Rai Purnendu Narayan Sinha, Bahadur, I am quite sure you are quite familiar with his work. (A voice—He is the Mudholkar of Behar). Yes that he is. Mr. Dada bhoy is a familiar name. To the Hon'ble Mr. Krishna Sahay—one of the very worthy sons of Bihar I may say, that the success of this Conference is due owing to his untiring efforts. Then we have the Hon'ble Rao Bahadur R. N. Mudholkar who remains an ex-officio member. I do not think I have anything to add to this resolution. I am quite sure you all approve the selection of these gentlemen whose names are put in the Committee, and those gentlemen who are to act as the Honorary Secretary, Honorary Assistant Secretary and the whole time Assistant Secretary. With these words, I commend this resolution to your care. (Cheers.)

The resolution was put to the vote and carried unanimously.

Vote of thanks to the Chair.

The hon'ble Mr. Justice Hasan Imam.—Gentlemen, at this late hour of the day when you have been here since about 12 o'clock midday, I have no doubt you are all wistfully looking forward to your liberation from this hall to go into the vast canopy of the sky. It would, therefore, seem somewhat unseemly, if I were to attempt to detain you for the consideration of another resolution. You are aware that the list of resolutions

has been exhausted, and, therefore, it must be some resolution that finds no place in the list but which yet must be very important that I have ventured to stand up to propose before you. For the last few days, our town has had the honor of receiving a large number of guests,—distinguished guests—from all parts of India; and now to-day I believe it the last ceremony of the series of ceremonies that had been exciting your imagination and satisfying your desires. It falls to my lot to say the last word that has to be said in respect of the closing part of these ceremonies, excepting of course whatever may yet fall from the President of this Industrial Conference. I intend to propose to you a vote of thanks to the Chair. (Cheers). Mr. Harkishan Lal at considerable sacrifice of time—in his case knowing as I do how valuable his time is—sacrifice of money as well, has travelled a very long distance to come here and preside over this Conference. Not that in this case, I ask you to value his services by the standard of money, but I ask you to value his services by the trouble he undertook to come here to render you the services that he has rendered. Gentlemen, Mr. Harkishan Lal has discharged his duties in a manner which perhaps language does not possess words to express the appreciation of; and as Chairman of the Reception Committee, an honor to which the Committee invited me, I feel that I shall not be doing my duty, if I do not propose this resolution before you and I feel in this particular case a personal satisfaction inasmuch as I have had the honor of knowing Mr. Harkishan Lal for some years and of having honored his name even before I had the privilege of knowing him personally (Cheers). That Mr. Harkishan Lal has been of immense support to every industrial movement in the Punjab is well-known and it is from the Punjab that you find the radiation of those happy and healthy influences in the industrial world that have gone to make Northern India better than it was before the activities of Mr. Harkishan Lal. (Cheers). Therefore in asking you to pass this vote of thanks to Mr. Harkishan Lal for his courtesy, for his consideration, for the every affable manner in which he has discharged his duties to-day, I am sure

I am not asking you to lay on yourselves any burden whatsoever. I am fully confident that you will pass this vote of thanks to Mr. Harkishan Lal with acclamation. (Loud Cheers).

The President's concluding address.

The President:—Hon'ble Mr. Hasan Imam and gentlemen, it is very difficult indeed for me to return in adequate words the obligation under which I have been laid by the kind words of your Chairman and by the kind action of your Committee, who invited me to occupy this high position to-day. Gentlemen, I will not take up your time in making a speech, but I can assure you that the work of presiding to-day has been the least onerous of all the works that I have done in my life. There has been absolutely no trouble whatsoever by the way in which you have so kindly treated me. I cannot conclude my remarks without asking you to pass a vote of thanks to the Chairman, the Hon'ble Mr. Hasan Imam and to the Secretary of the Reception Committee, the Hon'ble Mr. Krishna Sahay (Cheers), and his Assistant Mr. Sammaddar and various other gentlemen who have been kind enough in organizing such a kind reception and such a grand meeting; but before I conclude you will agree with me that, many thanks are due to me for taking the trouble that Mr Hasan Imam has described, then how many times more thanks are due to the Hon'ble Mr. Mudholkar (prolonged Cheers) who has given not one day or two days but years of his life to the service of this country. (Cheers). The Conference is closed.

Three Cheers for Lala Harkishan Lal were called for and heartily responded to.

Three Cheers for the King-Emperor, were also called for and heartily responded to.

Then three Cheers were called for the Viceroy and heartily responded to.

The Conference then dissolved.

Development of Industries

IN

Travancore.

BY

Dr N Kunjan Pillai M A B Sc. PH D,
Director of Agriculture, Travancore.

Travancore, like the rest of India, is essentially an agricultural country. Out of the total population of 3,428,975, as many as 2,240,483 or 66% are dependent directly or indirectly upon agriculture, while only 590,143 or 17% are supported by industries. Owing to the pre-eminence of agriculture in Travancore, any attempts for the development of her material resources and the enhancement of the welfare of her people must be directed first and foremost towards the improvement of her agricultural conditions. Rightly, therefore, the Government of Travancore, following in the footsteps of Imperial and Provincial Governments in India, have realised the necessity of reforming the agricultural methods and practices in the State, and with that end in view have organised a Department of Agriculture which is steadily though slowly carrying on the work of reformation. It may be said with just pride, therefore, that the question of agricultural improvements receives due attention at the hands of the Government and the people of Travancore, though the same cannot be said with regard to the development of industries.

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Industrially Travancore is very backward. Very little has been done by Government till now for industrial advancement, but there are signs of a move being made by them in this direction in the near future. The necessity for such a move which is sure to result in increasing material prosperity to the State is admitted by all right-thinking men. But as in British India, there are to be seen in Travancore also a few representatives of

the school of men who delight in disclaiming everything that is modern and praising all that is old and traditional. In their opinion, in matters industrial India should not go forward on the lines chalked out by the western nations, but should retrace her steps and go backward to those early times when she was a self-contained unit and the Indian society a well developed organism whose different parts being interdependent upon each other worked harmoniously towards the common weal. They imagine that this past was a period of millennial happiness in India and they earnestly wish and pray for the revival of the state of affairs that existed in those days. In doing so they point out, sometimes in exaggerated terms, the evils of industrialism in the West and warn us against similar evil consequences in India, if our industrial development were to proceed on the lines of the Western methods. Unfortunately the question of the practicability of the revival of the old order of things does not seem to trouble the minds of its few advocates. At a time when the people of India were divided into a number of distinct classes and when the large majority of them were kept in utter illiteracy and ignorance and thereby under subordination to the rest, there might not have been any difficulty at all to impose distinct occupations on different classes and make each class confine itself to the occupation assigned to it. But the times have now changed. With the advent of the benign British rulers in India, education has spread far and wide and reached even the lowest classes. In the wake of educational progress the mental horizon of the people has widened, and ideas of self-respect, freedom, and individuality have permeated through the whole society from the Brahmin to the Pariah. It is no longer possible therefore to hall-mark one class of people as carpenters for ever, another as blacksmiths for ever, a third as slavish labourers for ever and so on, and tell them to rest content with their lot however miserable it be compared with that of others, who by mere accident of birth assume a sort of superiority in everything mundane. If India wishes to revive in its pristine form and maintain in its entirety the hereditary system of labour, so that she might once again become a self-contained unit, she must bid

farewell to all the existing conditions and cut at the root of all those civilizing forces which are influencing the modern Indian society. She must, for example, break all communications with the outside world and become an isolated unit, her educational activity must be checked, and education must be confined to a limited few as in olden days; her railways and other internal communications must be abolished; her newspapers and journals must be put out of existence; and in fact everything that tends to diffuse progressive ideas among the people must be done away with. No one will even dream of such a course of action being followed by any Government, however autocratic and conservative it be. Let us, therefore, dismiss as impracticable the vociferations of a few orthodox conservatives who cry in season and out of season for the rehabilitation of the hereditary system of labour; and let us like a progressive nation develop our industrial resources on up-to-date lines. In doing so let us benefit ourselves by the experience of the Western nations and guard ourselves from the very outset against the pitfalls of their industrialism by efficient protective and preventive measures.

With these few general remarks I shall proceed to the considerations of the industries that now exist or that can be brought into existence in Travancore and try to find out how best they could be developed.

To get an idea of the condition of industries in a country one cannot do better than refer to its export and import trade. The trade returns of Travancore for the year 1910-11 are given below --

Exports.

Name of article.			Value.
1.	Copra ...	...	...Rs. 77,37,616
2.	Cocoanut oil	...	... ,, 24,16,266
3.	Cocoanut cake	...	... ,, 5,03,186
4.	Cocoanuts	...	... ,, 5,51,786

Name of article.			Value.
5.	Coir ...	...	...Rs. 53,42,225-
6.	Coir mats ...	...	... ,, 11,96,371
7.	Cable ...	...	... ,, 4,213
8.	Coir fibre...	...	... ,, 12,495
9.	Cocoanut husk ...	...	... ,, 57,222
10.	Jaggery (Palmyrah palm)	...	... ,, 3,35,350
11.	Jaggery (sugarcane) ...	...	... ,, 2,14,224
12.	Dry ginger.	...	.. ,, 9,77,075
13.	Pepper ...	...	... ,, 28,13,156
14.	Fish ...	...	... ,, 5,00,701
15.	Hides ...	...	... ,, 2,46,200-
16.	Other articles ...	...	... ,, 1,38,91,323
			<hr/>
			Total Rs...3,70,99,409

Imports.

Name of article.			Value.
1.	Piece goods ...	...	...Rs. 8,41,979
2.	Thread ...	...	.. ,, 5,40,166
3.	Cotton ...	...	... ,, 29,56,166
4.	Rice ...	...	... ,, 20,24,136
5.	Paddy ...	...	... ,, 60,45,818
6.	Tobacco ...	...	... ,, 11,36,148
7.	Hardware...	...	... ,, 2,06,821
8.	Provisions ..	...	... ,, 1,25,744
9.	Machinery..	...	... ,, 1,07,467
10.	Salt ...	...	... ,, 3,40,532
11.	Gingily oil	...	... ,, 1,25,588
12.	Glassware...	...	... ,, 1,45,768
13.	Liquor ...	...	... ,, 2,28,100
14.	Sundries .	...	... ,, 49,54,645
			<hr/>
			Total Rs...1,97,79,586

It will be seen from the above tables that the main articles of export are the products of the cocoanut palm, pepper, ginger, jaggery, fish and hides, which are mostly raw materials, and the chief articles of import are rice, paddy, and other provisions, piece goods, cotton and thread. Under import are also included, though they are not separately shown in the returns, soaps, candles, sugar, matches, paper and a number of other manufactured articles. The point to be specially borne in mind is that the export consists mostly of raw products, and the import to a great extent of such articles as are manufactured out of the raw materials exported from the State. Bearing this in mind let us take up for consideration the different industries one after another.

Weaving.—Among industries the first place must be given to weaving, for next to food clothing is the most essential requisite for man. There is no country in the world in which the art of weaving has not been developed from early times. In India weaving has been from time immemorial a thriving cottage industry, until the introduction of machine made cloths. Since then, there arose the competition between foreign power looms and native hand looms and it has at present assumed such formidable dimensions that the native hand-loom industry is threatened with complete destruction.

According to the latest census in Travancore, only 35,597 persons subsist by cotton ginning, spinning and weaving. As there is very little of cotton ginning and spinning in the State, it may be taken that almost all these persons are engaged in weaving. This means that one in every 96 of the population is a weaver in Travancore, while in the sister State of Baroda, whose population is less than that of Travancore, 36 out of every 1000 of the population are engaged in textile industries, chiefly weaving. The production of cotton goods in Travancore is not at all sufficient to meet the requirements of the people, for annually she imports piece goods to the value of 8 to 9 lakhs of Rupees. Though the demand for such goods is far in excess of the local supply, not a single power loom has

yet been started in the State. Of course it owns a number of hand looms which, in spite of the keen competition of foreign power looms, are able to consume annually more than 35 lakhs of Rupees worth of cotton and thread. The existence and present condition of these hand looms are to be attributed to the peculiar taste of Travancoreans. They have a special fancy for certain kinds of fine cloths which can be turned out in the hand looms only. As long as this taste remains unchanged the handloom industry may continue to exist; but it is fast changing and the condition of the industry cannot but be regarded as precarious. Everywhere else in India efforts are being made to improve the handloom industry by the introduction of up-to-date looms and the diffusion of technical knowledge. In this respect Travancore lags behind, and unless she follows in the wake of activity in other parts of India it is doubtful how long her handloom industry will be able to hold its own against the competition of improved hand looms and power looms of foreign countries.

Spinning.—Travancore is not a cotton producing country. The yarn required for her hand looms comes from outside. Owing to the facilities she possesses in importing cotton from Bombay by sea and from Tinnevely and other adjoining British districts by land, she can well afford to have a few spinning mills of her own. One such mill worked satisfactorily under European management at Quilon from 1884 till 2 or 3 years ago, when it passed into the hands of some Indians. Under efficient management and expert supervision the regeneration of this mill and the establishment of more of its kind in the State ought to be practicable.

Lace and hosiery making.—Through the influence of the Christian Missionary ladies lace making has been introduced into Travancore as a cottage industry and has become the means of subsistence to many a poor family. Those who are engaged in it are chiefly the women converts among the *Chanars* and

Pulayas, the so-called depressed classes, among whom the Missionary influence is seen most. These women are supplied with thread by the Missionary ladies, and the lace produced is collected and exported by them to Europe. The lace made in Travancore is considered to be of superior quality and has won medals and prizes at several exhibitions held in Europe and India. It is said that a woman working during intervals of leisure, say about 3 to 4 hours a day, is able to make an earning of 3 to 4 Annas per diem. What a blessing this is to the poor *Chanar* and *Pulaya* women who under ordinary circumstances cannot earn more than 2 or 3 Annas a day, and that only by hard work in the field under the scorching sun from daybreak till evening !

The lace industry is still in its infancy in Travancore. It is now confined to the Christian women of *Chanar* and *Pulaya* classes. It can surely be extended among the women of other classes as well, among whom also there are many poor families to whom an income of 4 Annas per head per day will be a source of great happiness and joy.

Another cottage industry suitable for the women of Travancore is hosiery making, which has not yet found its way into the State. Hand machines for this purpose are available at moderate prices, and it is said that with a machine costing about Rs 150, one person will be able to earn one to two Rupees a day. What a boon it will be to the half-starved women and their families if they could be initiated into this profitable industry !

Oil-pressing and allied industries.—The chief oils available in Travancore are those of cocoanut, gingelly, *Calophyllum inophyllum*, *Pongamia glabra*, *Bassia longifolia*, and lemon grass. Of these by far the most important is the cocoanut oil. A large quantity of it is consumed in the State itself chiefly for culinary purposes, and a much larger quantity is exported to foreign countries. The oil for local consumption is mostly produced in primitive country mills, of which there are a large number

scattered over the whole State and the oil for export is mainly produced in factories. There are about 12 such factories in Travancore most of which are situated in Alleppey, the most important commercial town in the State. In these factories the oil is pressed out of copra by means of power driven iron mills. Till a few years ago oil mills in Travancore were paying well, but they are not so at present. The demand in Europe now is more for copra than for oil, and consequently there is a steady rise in the price of copra whose export has thereby been considerably enhanced, while the depression in the price of oil has greatly lessened its export. If such a state of affairs continues for some time to come, the oil industry in Travancore cannot but meet with failure, unless protected by special means early enough. By the introduction of up-to date scientific methods of oil extraction and oil purification Travancore mill owners may be able to hold their own against their co-professionists in Europe for a considerable length of time, but they can attain permanent success in competition with European firms, only by starting in Travancore such auxiliary industries as the manufacture of soaps, candles, cocoanut butter, etc., so as to do away altogether with the necessity of exporting either copra or oil to foreign countries. As raw materials are available in abundance there is not the slightest doubt about the success of such industries in Travancore, provided they are conducted under efficient management and expert advice with a sufficiently large capital. If there are any industries for which Travancore is well adapted, they are the industries connected with oils. The question of their development in the State deserves the careful consideration of the Government and of such people as are interested in industrial advancement.

Fibre industry.—*Kerala*, of which Travancore is the most prominent portion, is rightly called the land of the cocoanut palm. A considerable portion of the cultivated area in the State is under this palm, and its products form about 50% of the export trade of the country. In the year 1910-11 coir and coir mats alone were exported from Travancore to the value of

more than 68 lakhs of Rupees, and these easily hold the first place among the industrial products exported from the State.

The coir industry is so far only in the stage of cottage industry in Travancore, the people engaged in it being mostly the *Esharas* residing near the backwaters which extend with very little interruption from near Trivendrum right up to the north, along the coast. The native methods of the preparation of fibre and its conversion into coir are simple and somewhat primitive; but owing to the special care and skill of the workers the coir they produce is ordinarily superior to the product turned out of coir making factories in other countries. It is too early yet to consider about the question of starting such factories in Travancore, for local labour is still cheap, and the hand made coir finds a ready sale in foreign markets. The problem that requires immediate consideration is the manufacture of mattings, rugs, brushes and other articles from coir. The trade returns show that, whereas the value of coir exported from Travancore in 1910-11 was nearly Rs. 53½ lakhs, the value of coir mats, cables and other manufactured articles exported in the same year was only a little over Rs. 15 lakhs. The coir that goes out of the State is no doubt used for the manufacture of such articles and there is no reason why this work cannot be done in this country itself. Here is a vast field for native enterprise. Let our rich brethren divert their talents and money in this direction. There are in Travancore 2 or 3 factories engaged in the manufacture of coir mats and other articles, and all of them are, I believe, in the hands of Europeans.

Among other fibres available in Travancore mention must be made of plantain, palmyrah palm and aloe fibres. Plantain is one of the widely cultivated crops in the State. The existence of fibre in the leaf sheaths of plantains has been known to Travancoreans from time immemorial, but no serious attempt has been made to extract the fibre and export it to foreign countries. No less than 29 varieties of plantain are cultivated in the State. All of them yield fibre good for cordage, while

about 12 varieties yield fibre of a fine texture which can also be used for weaving cloths.

Palmyrah palm fibre is extracted from the mid ribs of the palm leaves. The palm grows extensively in South Travancore and the fibre industry is mostly in the hands of the *Chanars* and other low classes of that part. The fibre is short and coarse and is well suited for making rough brushes.

The aloe fibre industry exists on a very small scale in some portions of Shencottah Taluka which lies close to the Tinnevely District of the Madras Presidency. The industry is mostly in the hands of the low class people, the fibre being extracted from the leaves of aloe plants growing wild in those parts. The fibre that is produced is purchased by merchants and sold in a lump to European firms in Tuticorin and other places.

Travancore affords facilities for the development of the minor fibre industries mentioned above. Raw materials are available in large quantities and more can be produced by extending the cultivation of the fibre yielding plants. What has to be done immediately is to appoint a fibre expert and establish schools under his supervision for training the people in the proper methods of extracting the fibres. Such a step will surely give an impetus to the development of those industries in the State. Its progress can further be quickened by the establishment of a central agency for collecting the fibres and exporting them to countries where there is a demand for them, an agency which must work in co-operation with the producers, so that they may get sufficient compensation for their labour and their due share in the profit.

Sugar-refining.—Travancore has nearly 10,000 acres under sugarcane and has ample facilities for extending its cultivation. All the sugarcane that is produced in the State is used in the manufacture of a brown amorphous mass of sugary matter ordinarily called jaggery. A somewhat different kind of jaggery is also made out of the juice collected from the spathes of pal-

myrah and cocoanut palms. These jaggeries have been used in Travancore in the place of sugar from very early times. But with the advance of Western civilisation jaggery is going out of fashion and sugar has become an indispensable article of diet to a good many whose number is steadily on the increase. Owing to the apathy of Travancoreans in industrial advancement they are now obliged to get sugar for their use from outside and at the same time export all the jaggery they produce to other countries. The value of the jaggery export came to nearly Rs. 5½ lakhs in 1910-11. Probably the very jaggery that is exported from here goes to some foreign sugar refineries and returns, after undergoing some changes, as brown or white sugar to be purchased and consumed by the Travancoreans. This is surely a deplorable state of affairs, and the question of mending matters by establishing up-to-date sugar refineries in the State deserves the careful consideration of all interested in the welfare of the country.

Paper industry.—Travancore possesses only one paper mill and that too has not been working satisfactorily for the past many years, probably owing to the difficulty of getting sufficient raw materials, and other causes. The materials generally used in the mill are old gunnies, rags, and torn paper, which are difficult to obtain in large quantities at cheap prices. No attempt has ever been made for the utilisation of grasses, bamboos and the numerous species of paper yielding soft wood found in abundance in Travancore forests. The question of transport will no doubt present considerable difficulty in this case and it can be overcome only by the establishment of factories for the manufacture of wood-pulp at convenient places within the forests. Such factories are likely to be more paying in Travancore than paper mills, because of the availability of an abundant supply of soft woods suited for the manufacture of wood-pulp.

Match industry.—Another industry which can be worked successfully in connection with Travancore forests is the manufacture of matches for which also several species of our

soft wood have been found suitable. The present Conservator of Forests in Travancore has published a memorandum on "Match factories in Southern India" in which he has pointed out the scope and facilities for the development of the match industry in Southern India and particularly in Travancore. As a result of this, a company has been formed with a view to open a match factory in the State and has secured from the Government certain liberal concessions for their undertaking. If the company sets about on proper business lines and takes care to secure the services of a well qualified expert, Travancore will surely earn the credit of being the pioneer in match industry in Southern India.

Sericulture.—There is no record or tradition to show that silk-worm cultivation was ever carried on in Travancore, though there is sufficient evidence to the fact that a professional class of silk weavers, known as *Pattunulkars*, existed in this State at one time and that somehow or other the class as a whole, and its profession practically became extinct. Attempts are now being made for the introduction of sericulture as a cottage industry into the State. An Experimental Silk Farm has been opened by the Government some 2 years ago, and the success of the operation conducted therein goes to prove that the cultivation of both Eri and mulberry silk worms is practicable in Travancore except during the periods of heavy rains. If this conclusion is confirmed by further experience the popularisation of sericulture in the State ought to receive its due share of attention from the Government and the people.

Fishing —I do not know if any other part of India affords better facilities for the development of fishing industry than Travancore. There is the sea skirting her on the west from Cape Comorin to Parur, there is an unbroken chain of backwaters extending practically throughout the length of the country; and there are numerous tanks and rivers scattered over the whole State, so that there is ample scope for the rearing of salt water and fresh water fishes. The Government of Travancore have so far done very little towards the development of this industry.

and yet we find that the State exports nearly Rs 5 lakhs worth of fish annually. It is not easy to predict how much more this export trade would be if scientific methods of fish rearing, curing and canning were adopted. Let us wait and see, for Government have now made a move in the matter and probably ere long a well organised Fishery Department will come into existence.

Mining — Travancore appears to be rather poor in mineral wealth. The only mineral that formed part of the export trade of the State for some years was plumbago. But owing to the inferior quality of the mineral the plumbago mines were closed about a year ago, and another more valuable mineral, namely monazite, has taken its place in the export trade. This new mineral, it is said, is seen all along the sea-coast and promises to yield a good revenue to the State for a number of years to come. Travancore has to remain satisfied with such limited activity in the sphere of mining industries until the existence of other useful minerals, ores or precious stones is discovered.

I have completed my account, though somewhat scrappy, of the existing and prospective industries in Travancore. The list is not by any means exhaustive, but I believe I have touched upon almost all those industries that are of importance. The question that has now to be considered is what has to be done for the development of these industries in the State. For convenience sake let us divide them into two groups, (1) cottage industries, such as hand loom weaving, lace and hosiery making, silk worm rearing, etc., and (2) factory industries, such as oil pressing, soap and candle making, sugar refining, etc.

For the development of cottage industries what is most urgently required is the establishment of technical schools for providing the necessary training in the practical side of the different industries to such young men as have a taste for them. Schools of this kind are indispensable both for the improvement

of the existing cottage industries and for the introduction of new ones. A loud cry is heard all over India for the organisation of technical education without which, it is said, the country cannot hope to make substantial progress in industrial development. All that is talked of in connection with technical education may not be quite practicable, and hence a note of warning is being sounded—of course rightly too—by some people here and there. The impracticability of carrying out the various schemes suggested by different persons is no justification for condemning technical education as a whole, as done by some. As far as Travancore is concerned, it is more or less certain that no material development in her cottage industries is possible unless and until a proper system of technical education has been established; and I believe the same will hold good in the case of such industries in other parts of India also.

Coming now to factory industries one must admit that Travancore is too small to be able to undertake the establishment of big technical institutes for the training of men in such industries. All that she requires for the present is a few specialists and for this purpose students might be sent to Europe and given the necessary training. To avoid disappointment and ridicule it is very essential that students are sent for specialising only in such industries as have a fair chance of success in Travancore. Otherwise Europe-retained specialists will have to go about in the country in search of employments which cannot be had here. For the success of the scheme it is also essential that students who go to Europe should equip themselves thoroughly in the theoretical and the practical side of the particular industries in which they specialise, so that they may be in a position to initiate and carry on successfully those industries in their native land on their return. There are several instances in India of the failure of Indian undertakings caused by the absence of expert knowledge and business habits on the part of the organisers. Such failures cannot but be ruinous to the cause of industrial development in the country, and they can surely be avoided if the organisers of new industries proceed with sufficient forethought and act under expert advice.

So far, we have seen that the first requisite for industrial development in Travancore is the organisation of technical education for cottage industries, and the training of a few specialists in factory industries. The next requisite is the establishment of an agency, something like the Commercial Intelligence Department of other countries, to act as intermediary between the producers and the consumers, whose duty it must be to supply the people with information about the foreign markets where their wares will find a sale. The merchants in Travancore are greatly handicapped for want of correct information on this point. They now depend for this on the agents of European firms who for the self-preservation, do not give publicity to all the particulars unreservedly.

The third requisite for success in industrial development is the spirit of co-operation among the people. Without co-operation very little can be achieved either in cottage or factory industries. In the case of the former the enterprise is confined to single individuals or families, and production can be only on a small scale. The product turned out by different individuals should be collected and sent out to foreign countries in large quantities. This work is generally undertaken by middlemen and they are able to appropriate to themselves a large portion of the shares that ought to legitimately go to the producers who are generally ignorant of the conditions of the foreign markets. This evil can be remedied by the formation of co-operative societies composed of the producers themselves, who should undertake the collection and export of articles, as is being done with dairy products in Denmark, and egg in Germany. In that case the whole profit will be distributed among the producers themselves, and it will be a stimulus for the further development of the cottage industries.

In the case of factory industries too, co-operation is of equal importance. The establishment of factories necessarily requires a large outlay and the capital required for that purpose cannot be collected in India at present without the co-operation of several individuals. The absence of a sufficient capital is one

of the causes of the failure of Indian industrial enterprise. The effect of insufficient capital makes itself visible in two ways, firstly in the tendency of the organisers to effect economy even at the sacrifice of efficiency, one potent and common example of which is the investment of money in old rotten machinery, and secondly in the inability of such industrial companies to compete with firmly established and well funded European firms. Instances of the failure of factories caused by the equipment of cheap machinery are not rare in Travancore, and instances there are, though not in Travancore at least in India, of the failure of Indian enterprise due to the competition of European firms. To guard against failures of these kinds, Indians who venture into new industries must start with a sufficiently large capital which it is possible to collect only by the unstinted co-operation of the people. Where there is such a co-operation there is no difficulty to raise any capital required. It is idle talk, the usual stocking trade of men who hold certain peculiar theories, to say that India is poor and she cannot afford to invest capital in industries. Capital she has enough, but only most of it remains idle and unproductive. There is a great deal of truth in the statement that Indian capital is shy ; but this shyness is due more to the lack of co-operation among the people than, as it is believed by some to their scepticism as to the success of new undertakings, for, even in industries in which success has been assured through the work of Europeans, Indians are not coming forward to invest their capital. It is more or less certain that until education has permeated through the whole society and enabled the people to appreciate the value and importance of co-operation, Indian capital will continue to be shy. It is matter for gratification that education is spreading very rapidly, carrying with it the wholesome influence of Western civilisation ; and probably the time is not far distant when we may see among Indians the right spirit of co-operation.

However well the people may co-operate and however hard they may work for industrial development, nothing much can be done in that direction, especially in a country like Travancore, without the substantial help and sympathy of the Govern-

ment. Opinion is not unanimous in this matter. There is one set of people who deprecate State interference in industrial enterprise, and there is another set holding just the opposite view. The lesson taught by Germany and Japan where industrialism is of a comparatively recent growth is that, without the help of the State at least in initiating new industries, progress in industrial advancement will be very much retarded. If this is so in the case of Germany and Japan much more should it be so in the case of Travancore and India. Of course undue help or interference from the State is always detrimental to industrial progress and should not be encouraged. But that is no reason why certain concessions and financial aid though on a limited scale should not be granted to the organisers of industrial undertakings. In fact such concessions and help will, instead of thwarting private enterprise, only stimulate its growth and development. The State, I think, will be quite justified in granting small loans, or rendering financial help in other ways under proper advice and sufficient guarantee for the starting of new industries, just as it helps ryots with loans for agricultural improvements. If the State does this, and if, as I have already pointed out, it also organises a proper system of technical education for the development of cottage industries, trains specialists in profitable factory industries and creates an agency for bringing within the reach of the people a correct knowledge of the conditions of foreign markets, and if the people on their part take advantage of these facilities and acting with a spirit of co-operation boldly enter into industries which have a reasonable guarantee of success, Travancore can surely look forward to a glorious future of industrial activity and material advancement.

THE COPPER & BRASS INDUSTRIES OF INDIA.

BY

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INTRODUCTORY.

There could be no doubt that India at one time occupied a prominent position in the metallurgical world, as judged by the high quality of the Indian iron, by the early anticipations of the processes now employed in Europe for the manufacture of high class steels, by the artistic products in copper and brass, and by the relics of ancient work seen at present. The famous iron pillar at the Kutub Minar near Delhi—a solid shaft of iron 23 ft. 6 inches height 16 4 inches in diameter and weighing 6 tons—is still a formidable task from the standpoint of the present day manufacturer. The huge copper statue of Buddha at Sultanganj, which has elicited remarks of praise and wonder from authorities on Indian art like Fergusson* and Birdwood, and the superb artwork in hammered and perforated brass, which can be seen in many temples, tombs, and mosques, bespeak highly of the stage of perfection to which the Indian Metallurgical industries had once reached. However this lovable excellence is no more seen in India at the present time. The manufacture of iron, excluding that by the Tata Iron and steel works, and the Barakar Iron works, is restricted, only to those areas that are far removed from the railways, which distribute the cheap imported article. Copper and brassware are made entirely from imported materials, and almost every attempt to work the known copper deposits have come to grief.

* Fergusson, History of Indian and Eastern Architecture, p 137
Birdwood, Industrial Arts of India, Vol II, p. 146.

The use of different metals for the making of domestic vessels marks a stage in the growth of

The Metal Stage in India

nations. Perhaps the most ready materials that presented themselves to the primitive men for this purpose were the dried up fruits like wild gourd, etc. These were copied in wood and stone as they progressed, while the next step was the making of unbaked and baked clay vessels. The discovery of the metals like copper or gold, which were melted by the forest fires, drew their attention to the possibilities of the use of these metals for the purpose of making the domestic requisites. From copper to brass was an easy step to those familiar with the working of the metals. In western countries we find the metal vessels again displaced by porcelain, enamelled and glassware, which are produced cheaply there on account of the well developed condition of the latter industries. This substitution of the metals by ceramic ware is likely to take a very long time in India and so she will remain in the metal stage for a pretty long period. The peculiar dislike that is felt among the Hindus towards vessels of porcelain or clay on religious and economic grounds makes the position of the metal industries of India fairly secure.

It might be noted in this connection that the Copper and

The Influence of Foreign Competition

Brass industry, such as is practised now in India, has successfully held its own against foreign competition and is little likely to be directly affected by the same. This has been possible on account of the great diversity in shape, size, and pattern of these vessels in different parts of the country, which does not permit of manufacture by a factory far removed from the market.

Again, there is an interesting feature of the industry which makes the study peculiarly fascinating. The Indian farmers have, on account of their poverty, to use earthen vessels even though they dislike them; they invest a great portion of their savings in buying the copper and brass utensils which form the family heirloom. However, few farmers can afford to

Metal Utensils "Marginal Luxuries"

keep up these "marginal luxuries"; in times of scarcity these have to be sold away and may be bought again in times of prosperity. This phenomenon shows how great is the demand for brass and copper vessels which is kept in check only by periods of scarcity and high prices. So complete is the correspondence between the sale of these vessels and times of prosperity that the farmer can be used as a kind of barometer for the latter. This will be further clear from the following quotation* :— "The supplies of brass and copper are wholly or almost wholly derived from the foreign countries and fluctuate largely with local needs and prices. Copper, being the chief metal used for domestic utensils and easily saleable when necessity arises, is in large demand in times of plenty, and is instantly thrown on market in bad years, so that the rise and fall of this traffic constitutes one of the safest indications by which to judge of the economic condition of the people of India. The following import figures may be recorded

1876-77	241,000 cwt.	1900-01	160,000 cwt.
1897-98	322,000 ,,	1901-02	194,000 ,,
1899-1900	91,000 ,,	1903-04	433,000 ,,

The fall in 1899-1900 was the immediate effect of the scarcity and famine that prevailed in those years. Recently the demand for electric traction and lighting have somewhat increased India's needs for copper, but the quantities above given may be accepted as indicating roughly the amount required by the Indian coppersmiths."

The study of the Brass and Copper industries of India derives its peculiar importance also from the undeveloped state of the Indian Ceramic Industries. The fact that the glass, porcelain, pottery and enamelled ware industries are to be developed. The undeveloped state of these latter industries, and the religious prejudice the majority of the Hindus have in using earthen things for cooking or eating purposes, go a great way in securing

* Imperial Gazetteer of India; Vol III, p 237.

a steady market for the articles made from these metals.

Necessity of the Development of the Metal Industries.

The necessity of developing and improving the industry in these metals also arises from the backward state of the ceramic industries, and cannot be too much insisted on. Though it was pointed out that the industry has not suffered directly from foreign competition, it must be noticed that the introduction of cheap foreign glass, porcelain, enamelled, tinned, and galvanised articles, accompanied by a corresponding change in the attitude of the educated Indians towards European customs and things, is likely to upset the manufacture of brass and copper vessels in India unless more systematic and scientific methods of work are adopted. Already, the large costly vessels, that used to be the pride of rich men, are replaced by articles made of galvanised or tinned iron (*e. g.* Buckets, Bath tubs, etc.). The brass cups and saucers are being replaced by porcelain tea sets, and the introduction of cheap enamelled ware has displaced the copper and brass articles from many poor houses.

Imports of Enamelled Ware in 1911-12

The following extract from the "Review of Trade of India" for 1911-12 shows the extent of the substitution:—"Enamelled ware is of peculiar interest as it is a substitute for the distinctive Indian vessels of copper and brass. During the years when the prices of these metals were very high, the importation of enamelled ware made great progress; and in 1907-08 the total value rose to Rs. 24.49 lakhs. But on the return of the copper prices to more normal levels the importation of enamelled ware declined until 1910-11, when the expansion was resumed and brought the total Rs. 19.03 lakhs. This movement has been greatly accelerated in 1911-12; and the advance recorded is one of Rs. 6.24 lakhs or 32.8 per cent., bringing the total to Rs. 25.27 lakhs. It may be noted that the imports of copper simultaneously showed a decline of 127,117 cwts., and of Rs. 67.71 lakhs in value." It should be also pointed out in the same connection that the imports of Aluminium have also increased. In 1898, when the first imports

of the metal had commenced, it scarcely amounted to 100 tons and £19,200; but in 1911-12 the imports of Rs. As aluminium is solely used in India for the making of cooking utensils, its increased imports must have affected the sale of copper and brass vessels unless the demand had also increased at the same time

Increased Imports of
Aluminium,

reached 1,200 tons valued at 15·2 lakhs

SECTION I.

The origin of the brass and copper vessels like many other things in India is shrouded in hazy antiquity. However there could not be any doubt as to the fact that the shapes of vessels in the present use was originally derived from the fruits, shells, horns, and leaves utilised by primitive men. The shape was changed in some cases to suit the changing fashions or necessities; the general tendency to substitute metallic vessels in place of the more transient and fragile articles of earthen ware or wood is seen even at the present day. This is well expressed by Mr. T. N. Mukkerji in his "Monograph on Brass and Copper Manufactures of Bengal" — "The dried up shells of wild gourds which hung handy from trees of the primitive times no doubt formed the first drinking cup of the earliest man in India. These shells are still used as such by religious *itinerants* whose austere life permits only the simple habits of prehistoric ages, but no luxurious innovations of latter days. But when the art of copying vegetable and animal objects was learnt, when gold and copper were discovered and the manufacture of brass invented, the householders began to make vessels and other articles of stone or metal similar in shape to that of the natural objects, employed in domestic use, chase, war, or personal adornment. In brass the gourd-shell gradually developed into the *Lota* and the *Ghati*; and in copper the scooped out rhinoceros' horn which on account of its comparative rarity and durability must have

The Origin of the Copper
and Brass Vessels of India

been a very valuable utensil in ancient times, and the oblations poured out of which are still considered highly acceptable to gods and ancestral manes, became the sacrificial vessel called the *Kosha* of modern days. The large round leaf of the lotus, or the copy of it made by pinning together smaller leaves of other plants, which together with the plantain leaf is still used as a plate all over the country, is the origin of the modern *Thâlâ*. The half of the round *Bel* fruit rind or cocoanut shell, still used as a cup, spoon or ladle, gave the modern *Bâti* or *Katorâ*. Hollowed pieces of wood still used specially in jungle tracts to keep water, milk, or pea-soup, during feasts and festivals, formed models for large brass jars called *Gharâs*, or circular basins called *Gâmlâs*. The iron arrowhead of latter times was the copy of the pointed deerhorn sharpened by rubbing it on stones, and the modern plough that of the forked branch of a tree used to scratch the soil in primitive agriculture. Similarly the flowers and the leaves of trees such as *Champâ*, the Cocoanut and the *Pân* gave form to various brass articles of personal adornment "

The increased circulation of wealth after the introduction of railways in India and the consequent change in the notions and ideals of living, have been responsible for the substitution of household utensils formerly made of basketwork or clay by those of brass ; brass vessels are preferred also on account of their portability, durability and greater purity. " The rice-washers made of shining brass, now glitters in every shop in Bengal, though that made of sliced bamboo is still almost in universal use. The vessel called *Hândi* used to boil rice is being made of brass, though that made of clay is still used by the high and the low, as the former is costly, requires daily cleaning and scrubbing, and is said to make the food cooked in it heating and harmful. The incenseholder called *Dhunachi* may now be had of brass, though fifty years ago, that made of clay was solely used for burning: Dhup and Dhuna of the Hindûs and the Loban of the Mahomedans." Similar to the substitution of earthen ware by brass is the substitution of iron vessels by those of copper and brass.

Substitution of Clay Vessels
by Brass in modern times

In connection with the use of brass in India it is interesting to note that India had perhaps no bronze age corresponding to that in Europe. Bronze is an alloy of Copper and Tin which is not so popular in India as Brass which is an alloy of Copper and Zinc. According to some authorities, the metallurgy of Zinc was known in India very long time ago (the metal and its oxide being used frequently in Ayurvedic Medicine), and was then transmitted to the Western countries. However, a small quantity of bronze is still used in India under the name Kânsa or Phul, or bellmetal or white brass; it is preferred to ordinary brass in the making of ornamental ware, but is not considered sufficiently pure by the Hindus for eating or cooking purposes

The use of Copper and Brass utensils among the Hindus is characterised by peculiarities of religious sanction which marks out these metals from others like Iron, Lead and Zinc which though known to the ancient Hindus have been discarded from religious and hygienic motives. In the code of Mann, vessels of gold and copper are said to be of first class purity, whereas silver and brass are put next, bellmetal coming the last. Iron vessels are thought to be impure for eating purposes, and it is believed that where they are used gods and spirits of the deceased ancestors have no access. The order of the purity of the metals is dependent on the presiding deity, each metal being considered under the sacred patronage of a mythological deity. Thus Copper is presided over by the Sun, Silver by the Moon, Brass by Mangal, Lead by Budh, Pewter (alloy of Lead and Tin) by Shukra, Gold by Brihaspati (the preceptor of the gods), Iron by Shanî, and Kânsa or Phul or Bellmetal by the demon-god Rahu. While the vessels carved out of shells, pearls, crystal or stone are put on the same degree of purity as gold, the earthen vessels are unfit for eating out of more than once. While the metallic vessels can be cleaned by scourging, &c., after eating from them, the earthen vessels have to be thrown away. This custom is seen even now at many places in Northern India where

the custom of throwing away the earthen pots after their being once used eating or drinking purposes is followed rigidly ; of course the rule does not apply to vessels used only for cooking.

How ever the religious injunctions are not interpreted in the same way in all parts of

India. For example in some parts of the country brass vessels are invariably used after tinning, in some parts tinned brass utensils are polluted if touched by the low caste servants , so also bronze vessels (of kânsa or phul) are not given to the servants for cleaning. Again though copper is considered to be a very " pure " metal it is scarcely used by the Hindus except for drinking purposes or for storing water ; perhaps the metal is consecrated to the gods and so too sacred for use by human beings. The sacrificial vessels used in worship are generally made of copper if not of silver

The religious beliefs of the Mahomedans about the use of metals are very different from those of the Hindus According to " Durr-i-Mukhtar", an authority on Mahomedan customs, "it is detestable to eat in brass and copper vessels, earthen vessels are better and more excellent; for the Prophet of God has said that those who keep these vessels in their houses are visited by angels". " It is not detestable to eat in tin, lead, crystal or cornelian vessels " "The use of gilded vessels is right according to all authorities, for the gilding cannot be separated and is only a colour which is of no conservance " The jugs used by the Mahomedans have a spout generally, in accordance with an ordainment in the Koran that a man should perform his ablutions in running water, the falling of the water through the spout being considered equivalent. Though copper vessels cannot be used as such, they are acceptable if they are regularly tinned, so that the metal copper is always invisible

In general it may be said that the Hindus are against the use of copper and earthen vessels for eating and drinking purposes, while the Mahomedans favour both though copper has

Religious Beliefs of the Mahomedans for the use of Metals

always to be tinned. The Mahomedans are against the use of the alloys but the Hindus prefer to use alloys, some of them like the Panchdhatu (alloy of five metals) being considered most sacred. Among the common alloys besides brass (copper and zinc) are Bronze, Kansa or Phul (copper and tin) and Ranga or Pewter (lead and tin). Out of these brass is preferred to others, as it is the least liable to defilement when cleaned by low caste servants. However, kansa or phul or Bharat vessels are prized for their fine whitish colour and also their strength and sheen. The alloy is also esteemed for its power of resisting the action of acids in food and drink; it is less liable to be tarnished and so is put to ornamental and higher uses. It is more sonorous than brass and is therefore admirably adapted for gongs and bells, the famous Burmese gongs being made of such alloys. Brass is used for all sorts of things whether prepared by casting or hammering, the sharpness of its castings can be increased by the slight addition of lead, while the hardness is varied by the addition of a little tin. It is this capacity to undergo a large variety of treatment which makes brass a very useful alloy.

SECTION II

The Castes employed in the Copper and Brass Industry

A study of the castes employed throws great light on the organisation of the industry and is instructive in showing several general tendencies perceived throughout the country (1) The industry supports all castes of the people; in some provinces it includes the "whole range from the Brahmin to Bhangi," while in some the Hindus and Mahomedans co-operate in many important operations. This shows that the profits of the industry are fairly certain and lucrative, which with the general weakening of the caste principles testify to the germs of the

The General Tendencies of the Organisation of the Industry

Industrial Awakening seen all round in India (2) The large variety of castes employed permits of a division of labour which is so characteristic of the industry, specially in the longer centres (3) The migration of copper and blacksmiths from the villages to the larger centres of the trade shows the tendency for the localisation of the industry, which has been necessary in present days of hard competition

From the consideration of the division in the different provinces, the castes employed in the industry may be divided into two wide groups. Firstly, there is the capitalist class who invest their money in the raw material and pay wages to a lower class of workers, which latter is generally subordinate to the former. The capitalist class is known by different names in the different provinces—in the North they are called Kaseras or Kânsaris, while in the South they are named Kansârâs or Kâsârâs. The other or the workmen class is named Thatheras or Tamerâs, or Tâmbats. This indicates mainly a distinction between the makers and the sellers of the utensils. Sometimes, as in small villages the two functions are combined, and in such a case the craftsman works as master, workman, producer and retailer all in one. It requires a fair amount of risk and work for the capitalist class to advance money in wages and to sell their products. Often they have to go out to the weekly fairs in the neighbouring cities or to the large religious fairs or have to send a cartload of vessels round the villages at the harvest time. In small towns, a single family helped by a few skilled or unskilled artisans supplies all the men necessary; by slow gradations the division of labour is so extended as to approach the Western methods. Thus in many of the large towns twenty or more men work under one rich capitalist who supplies them with tools and other requisites and pays their wages. This method is generally attended with a perfect division of labour, each man being responsible for only one part of the process for the manufacture of a single article. Thus in making an ordinary pot or vessel one man cuts the sheet into

Two great Classes Capitalist and Workman

Division of Labour in the large Towns

proper pieces, another beats them roughly, a third man beats out the lower half of the vessel, a fourth man the upper half, a fifth man makes the dovetailed joints ready for soldering, a sixth does the soldering while there are different men for cleaning, polishing, and finishing the vessels. By this process each man is able to do his work in the most efficient and rapid manner; thus considerable saving in time is secured while improving the quality and uniformity of the goods turned out. The immense advantages that accrue from this system are directly responsible for the concentration of the industry in the larger centres of production. It does not pay the small producer in a

Depression in the Village Industry

village to make a few articles on the spot. The smaller markets get their supplies from the towns almost entirely (except perhaps a few brass ornaments made by the village brass-smith who also repairs old vessels); consequently, although there is a rise in the industry as far as the large towns are concerned, it is not in a prosperous condition in the villages and the smaller towns. This has led to the migration of the brass and coppersmiths and to the interchange of the occupations of the different castes.

We will conclude this section with a description of the castes employed in the different provinces

The Castes employed in

In Bengal, all castes without distinction seem to have trespassed into the hereditary profession of the braziers, and are seen busy hammering copper, moulding brass, and polishing bronze, or selling the utensils as wholesale merchants, retail shopkeepers or wandering hawkers

Bengal

In Punjab and United Provinces, there are in most centres of manufacture two distinct bodies of men

Punjab and U P

—the Kaseras or the Capitalist dealers (Mahajans) and the Thatheras who are more or less skilled artisans. The connection between these two classes is of varying degree of intimacy and in the extreme cases the latter are practically the slaves of

Relation between the Capitalists and the Workmen.

the former, who by a system of advances that are never paid off keep them in their power and prevent their disposing of their services to the highest bidder. The Kaseras supply the material and pay a fixed rate per seer of the finished goods. The Thathera does not on the whole seem to be badly remunerated, as he can easily make Rs. 20 to 30 per month. The profits of the Kaseras on the ware that passes through his hands vary from $1\frac{1}{2}$ to 2 annas per rupee of prime cost. It is stated that this dependence of the artisan on the capitalist tends to discourage enterprise and militates against the artistic development of the manufacture.

The Kaseras of the Central Provinces (District Hoshaungabad) place themselves on equality with the Brahmans. Their habits and mode of life, their system of bath and worship, the use of the sacred thread, avoidance of animal food and drink, suggest that they are not much below the Brahmans in their social scale; in many cases the food prepared by the former is eaten by the latter.

The Tameras or the workers in copper and brass who generally beat out the vessels are not so respected as the Kaseras; while the Otaris who form another section employed mainly in the casting processes, are still lower in the scale. However the distinction is not quite rigid as, as in other provinces, other castes or subcastes are also engaged in the industry.

The Kâsars of Nasik do the only business of selling brass and copper vessels wholesale or retail. They are well-to-do generally and wear the sacred thread, but they eat animal food and drink liquor; however they are generally sober and orderly. Tâmbats are said to have come from the Panchmahals in Gujarat three or four hundred years ago, and seem to possess many things in common with the present copper-smiths found at Ahmedabad, Baroda, Surat or Bombay. The

Tâmbats of Nasik speak Gujarati at home and their women put on a modified Gujarati dress. Their work is restricted to the making of large vessels generally without carving but noted for

Kalankars

the beauty of shape and polish. Besides these, the Kalankars or the Tinsmiths who

are engaged in small vessels are not held in so good esteem as the Tâmbats. The Charakwalas of Nasik

Charakwalas

correspond to and include some Thatheras

of Northern India. They do the work of polishing on the lathe, generally make no pots, and are the servants of the Kâsirs. The Nasik industry shows the great attraction the trade had for people from distant parts like Gujarat and Northern India, who in expectation of a lucrative income have migrated to the place

Poona

The same description about the castes holds for the Poona workers in brass and

copper, while with a few changes it applies also to the copper and brasssmiths of Gujarat, at places like

Bombay

Bombay or Ahmedabad

The total number of men supported by the industry in the important provinces and towns can be seen from the census figures quoted in the appendix. As may be expected from the limited centres of production, the distribution of the workers in these metals compared to the population works out to a small figure, *viz.*, about 1½ workers* per 10,000 of population. However, this number varies from province to province. In Bombay Presidency there are about 60 men per ten thousand while in Bengal there are about 50 per ten thousand. The total number of men supported by this industry is nearly four lakhs, or more exactly 3,90,226. For further details, see Tables I and II below.

* See Census Report, 1901, Vol. I, p. 197.

TABLE I.

Total Workers in Brass, Copper, Bellmetal, and Aluminium in India (Census Reports, 1901, Vol. I-A, Pt II, p. 376).

	Total Supported	Workers Male.	Workers Female.
Brass foundries, owners, managers, and superior staff. }	1,696	569	127
Brass foundries, operatives and subordinates }	3,396	1,237	61
Brass, Copper and Bell-metal workers. }	2,61,622	89,002	976
Brass, Copper and Bell-metal Sellers }	1,23,258	40,227	4,654
Aluminium Workers and Sellers (Madras & Mysore only). }	254	100	...

Workers in Copper, Brass, Bellmetal according to Provinces.

Provinces.	Actual workers.	Partial agriculturists.	Population in thousands.
Bengal	35,347	2,511	74,744
Bombay	10 501	236	18,559
Burma	1,822	7	10,490
Central Provinces	7,745	127	9,876
Madras	21,164	892	38,209
Punjab	8,970	82	20,330
United Provinces	22,836	1,331	47,691
Baroda State	635	...	1,952
Hyderabad State	11,660	916	11,141
Kashmir State	570	25	2,905
Mysore State	2,655	101	5,539
Travancore State	2,180	22	2,952

Total Supported 390,226, out of 294,361,056

Total population of India, i. e., workers in these metals are about 13 per 10,000 of population.

TABLE II.
Distribution of the Workers in the Large Cities of India.

	Bombay		Calcutta		Madras		Delhi		Lahore		Ahmedabad		Agra		Cawnpore		Allahabad		Amritsar		Lucknow	
	W	D	W	D	W	D	W	D	W	D	W	D	W	D	W	D	W	D	W	D	W	D
Brass foundries Superior Staff	.		6	32					3	17			.									
Brass foundries Subordinates	..		114	115					24	57			..						.			...
Brass & Copper Workers	756	935	708	1073	323	747	1894	2748	71	248	157	356	47	89	296	525	87	91	343	282	67	352
Brass & Copper Sellers	169	220	815	1139	247	509	375	1617	135	361	136	180	2	2					135	165	586	517
Aluminium Workers and Sellers	.		.		90	136																
Total	925	1155	1643	2359	660	1392	2269	3365	233	683	293	536	49	91	296	525	87	91	478	447	653	869
Total population of the Town in thousands	776		847		509		208		309		185		188		197		172		162		264	

W = Workers.

D = Dependents.

SECTION III.

The Wages and the Profits of the Industry.

The wages of the experienced worker in copper or brass varies from eight annas per day to Rs. 3 per day, with all sorts of gradations. This amounts to a monthly income varying from Rs. 15 to Rs. 90 per month, though it must be noted that the higher limit is reached by a few only. The inexperienced labourer scarcely gets more than annas three to six per day.

The profits of Kaseras or the sellers of the ware varies from half anna to four annas per Rupee of prime cost, though it is unlimited in the case of artistic ware

It must be pointed out that the above figures are very vague as they include averages for different provinces. As in other industries the wages differ very widely also with the different kinds of the work, thus, for example, the hammerman, the fireman, the blower (for the fire), the man to hold the plate on the anvil, the makers of designs and moulds, the crucible lifters, the finishers with lathe and chisel all perform their own specialised work and get different amounts of wages.

On the whole, the relations between the Workers and the Capitalist classes are of a fairly cordial type, and as the industry is yet on a domestic or workshop system there is little likelihood of its being disturbed by interval disunion of a serious kind.

 SECTION IV.
The General Methods of Manufacture

The method used in different parts of India for the manufacture of domestic utensils and other artistic ware may be generally divided into two main classes *viz.*, the Beating

and the Casting Processes. These methods are almost the same throughout the different provinces, the only difference being sometimes in the use of different instruments or raw materials to suit local conditions and requirements. Very scarcely any machinery is used by the ordinary brass and copper-smiths and the introduction of the methods of stamping out circles or sheets of metal into required shape by machinery is restricted to a few metal factories only, which again are not working satisfactorily.

In the beating process the metal is first beaten into sheets of required thickness and then hammered to the required shape. At present, generally the imported copper and brass sheets are directly cut and hammered into vessels of desired form, but often the sheets are made from ingots or old vessels of brass or even from the metals, copper and zinc, which are alloyed in the proper ratio by weight. Copper requires a high temperature (1996°F) to melt, so copper sheets are imported in preference to the ingots or bars. To make brass, the copper is first melted and then zinc (which fuses at only 773°F) is gradually introduced. Great care is not taken here in India in the making of brass, except perhaps in a few of the larger centres. A very high temperature has to be avoided, otherwise both copper and zinc volatilise and cause loss; again, zinc should be introduced immediately before pouring out; if allowed to remain long the metal volatilises and passes into the chimney. Of course zinc has to be added warm and free from moisture to avoid explosions.

The metal is generally fused in crucibles, made of clay and paddy husk and previously fired; in some of the larger centres graphite or metal crucibles are used. When the metal or the alloy is properly fused it is run out into shallow earthen dishes, the size of which varies with the amount of the charge. The dish is broken as soon as the metal has solidified and the metal while still hot is hammered into plates on an anvil. One man rotates the metal while three or four others alternately strike at it till a plate of required thickness

is obtained. The plates are then cut into different forms for different kinds of vessels. These pieces are then worked out in several steps over different anvils of various shape and size. Sometimes smaller quantities of the alloy are forged into a single small plate which is at once beaten out into a small vessel like a dish.

As in the case of beating out the plate or the sheet, the transformation of the plate into a vessel is generally accompanied by a complete division of labour which perhaps could not be carried further. The upper and lower parts of a vessel which are different in size and shape are beaten out by different workers; a different man makes dovetails at their ends ready for a joint; soldering is done by a still another man who spreads over the joint a mixture of equal parts of copper and zinc, fuses it and hammers it in. The cleaning, polishing and finishing are in the hands of different men. Generally these vessels are finished with a hammer which leaves a spotted appearance throughout the surface.

The Casting Process is somewhat similar to the beating process as far as the initial stage of the melting of the metal is concerned. Different methods are used for different purposes and in different provinces, but the following is a fairly general description. The moulds are generally made of clay and sometimes those for solid castings are of stone or iron. The latter generally consist of two parts; the lower frame is put on a board and filled with ordinary earth which is rammed down and made quite even, the upper frame is similarly treated and a small channel for the molten metal being left the two frames are clamped together. For hollow castings, the moulds are made in different ways; a clay core is first prepared and then coated with wax or a similar mixture; the wax is then worked into proper design and shape and then coated with

Making of the Vessel

The Casting Process

Moulds for solid Castings

Moulds for hollow castings

fireclay, followed by another coating of a mixture of clay and paddy husk. When the mould is ready it is heated and the wax from the middle is let out from a hole. The two cores of the mould are sometimes supported by small splinters of wood or metal. Before use the moulds have to be heated gently so

Mould Furnace

that they can withstand the contact with the hot metal, and for this purpose a mould furnace, of bricks coated with mud, with a rough framework of clay for resting them, is generally used. The metal or the alloy itself is heated in another furnace which is generally

Crucible Furnace

sunk a few feet below the surface and is supplied with a pair of bellows for sending in a blast. There is also a lattice-patterned stage for resting the crucibles (made of clay and paddy husk) containing the metal or the alloy. Heating for about five hours is required for melting the alloy; the proper point of fusion is judged from the appearance of a peculiar greenish flame, when the moulds are brought from their furnace and kept ready for receiving the

Pouring in Moulds

metal. In some cases, specially when the moulds are small the crucible and the mould are held together by a hollow clay joint and the metal is run in by simply inverting the crucible. After the metal is transferred to the moulds they are allowed to solidify and cool for four or five hours. The cast article is then taken out from the mould and is given to the filer who files off the inequalities of the surface and who beats

Finishing the Cast Article.

them into shape if necessary. The article has in many cases to be mended by soldering or putting in a small patch of the same metal before it is given to the polisher for final finishing.

In reviewing these two processes it may be said that the beating process is done better than the

Review of the two Processes

casting. Little improvement is necessary or possible in the beating process, beyond the utilisation of small hand machines instead of manual labour. The division of labour and the organisation of the industry have already

reached a point when the use of costly machinery and appliances is rather out of place, as already shown by the failure of many of the factories for making only brass and copper utensils. However in the casting process improvement is necessary except in a few places. In many cases, as many as 25 per cent of the castings are imperfect and have to be rejected or mended by patching or soldering.

SECTION V.

The Industry in Different Provinces of India.

We will now take up a detailed description of the industry as it exists at present in different parts of India, restricting ourselves to the items of general importance within the limits of our subject. It would be difficult to prepare a useful list out of the large variety of the articles of copper and brass made in the chief centres of the trade. The most common articles to be seen in all shops of the metal vessel dealers throughout the country are the domestic utensils like lotas or pots, dishes, cups, bowls of various sizes and patterns, and the articles to be used in temples or places of worship, *i.e.*, Idols, Bells or Gongs, Lamps, Censers, saucers, Spoons, Cymbals, etc. The following quotation gives an idea of the industry in present times :—

“ Indian craftsmen show a large capacity in the utilisation of copper and brass and their alloys. In Burma, for example, images of a stupendous size are cast in brass by a small band of operators, whose appliances would seem to be absolutely inadequate, judged by European standards. In many parts of India, again, as in Rajputana cham bangles are moulded and sold for a few annas a pair which in Europe and in America could not be produced at many times the price charged. Between these extremes in magnitude and intricacy lies the range of domestic and sacred utensils for the production of which every village possesses its skilled coppersmiths. Ordinary domestic utensils are

A List of the common Articles made in the Industry

The Domestic Utensils

rarely ornamental, but their shapes are often extremely graceful. The articles most generally used by the Hindus is the *lota*, a globular melon-shaped vessel with an elegantly reflexed rim, which doubtless originated from the partially expanded flowers of the sacred lotus. The Mohammedans have given their vessel (*Tonti*) a spout, because the Korân ordains that a man should perform his ablutions in running water, and the falling of the water through the spout is considered to comply with this direction. The shapes of the *lota* and the *tonti* have given birth to widely different forms of domestic and decorative metal work. Some of the

Ornamental Ware

most beautiful and interesting copper and brass wares of India are those directly required for ceremonial purposes, or which have been derived from the implements used at the temples. The following are the principal centres of ornamental copper and brass work: Kashmir, Nepal, Sikkim; Amritsar and Lahore (Punjab); Lucknow (copper) and Benares (brass) in United Provinces; Jaipur, Bikaner, Dholpur, Ujjain and Indore (in Rajputana and Central India); Poona, Bombay, Nasik, Bhopur, Baroda, and Kathiawar [?] in Bombay Presidency; Mysore, Madras, Madura, and Nellore in Southern India. The brass work of Jaipur, which is specially artistic takes the form of miniature and charmingly natural reproduction of bullocks, carts, and scenes from country life in general. The gongs and amages of Burma are also well-known."*

Taking the different places in the order just enumerated, the artistic work of Kashmir in the extreme North stands most prominent. Besides the usual articles of brass made for domestic purposes, unique and quaint patterns of ornamental ware, *e g.*, candlesticks, lamps, vases, teapots, etc., are seen. Copper ware was once a great favourite but is now going down partly because the patterns are not very good, and partly because the metal tarnishes rapidly. Copper articles sent to England reach there

* Imperial Gazetteer of India, Vol III, p 240

quite black and, when cleaned by mineral acids, both the polish and the beauty of the article are lost. The engraved and raised

Lac and Tinned Work

work of Kashmir is very beautiful. Lac work on brass and copper is not very effective; but tinned work on copper is well done. "It is a Turkoman art introduced into Kashmir where it has attained great perfection. Tin is soldered on copper previously graven with a floral design, the sunken ground of which is then filled with a blackened composition of Lac. The raised patterns shine like frosted silver out of a groundwork of blackened foliated snow delicately traced." It partly resembles Moradabad work,

Imitation of Yarkhand Work

Ludakh, Thibetan, and Yarkhand patterns and sold as such. These articles are made in the bazaars of Shrinagar and are buried in earth or otherwise dealt with to give them an appearance of antiquity, which the unwary purchaser buys as old Ladakh and Yarkhand goods. However, the genuine old Kashmiri patterns—Lbassa bowls, Yarkhand vase, Bokhara vase, Kashgar lotus, Aftâba, Kangri—are all very unique and truly oriental. It is a great pity that some

Effect of European Influences on Indian Art.

of the visitors ignoring true art give a catalogue of a European jeweller's firm to the Kashmir artisan and ask him to copy the Queen Anne, the Windsor or Georgian pattern tea set. This mixture of oriental art and the occidental pattern is most unhappy, and disastrous in the interests of the Indian Art.*

The artwork of Punjab is not quite noteworthy. The chief

Punjab

centres of copper, brass, and kâusa work are Rewari, Delhi, Panipat, Jagadhri, Amritsar, Pinddadankhan, Gujranwalla, Lahore, Umballa, Ludhiana, Jallundhar, and Peshawar seem to have attained some importance in recent times. At these places little work is done besides the manufacture of vessels for domestic use which are

* A. Mitra, Lahore Industrial Conference, 1909

only roughly ornamental All the brass, copper used is imported chiefly from Europe. Formerly copper used to be obtained from Kulu but this import has entirely ceased. Various copper and zinc ores found in the Kulu hills and other parts of the Himalayas used to be mined, but the imported metals are so cheap that there is no immediate likelihood of the mines being reopened. Both yellow and white brass (bellmetal) are manufactured in the Punjab. Brass ware is either hammered or cast; copper ware is either cast or made of sheets of copper bent and soldered together.

Indian Copper from Kulu

The vessels made in Punjab are inferior to those made at several places in United Provinces and consequently it has to import annually from the latter about 7000 maunds of brass ware and 8500 maunds of copper ware in excess of its exports.*

Imports from United Provinces

The chief centres of the trade in the United Provinces of Agra and Oudh are Benares, Muttra, Mirzapur, Moradabad, Lucknow and Farukhabad. The first three are the centres of the Hindu trade, while the last three places specialise in the ware required for the Mohammedans; out of these two groups Mirzapur and Farukhabad manufacture the articles of domestic use only. The other centres produce besides domestic utensils artistic ware, some of which is famous throughout India and even beyond. This fact permits of a little more space being devoted to these places.

United Provinces

Artistic Ware.

Benares work excluding the slight manufacture of household utensils is generally of the ornamental type, which latter may be divided into three main types —

Benares work three types.

- (1) Religious or sacrificial vessels, brass idols, brass and copper sacrificial implements, bells and gongs made of phul or bellmetal, brass doors and panels.

* See "Industrial Punjab" by A. Latifi.

monkeys and down the next street another dedicated to the same goddess is full of brilliant peacocks, while above all else rise the glittering dome of the great golden temple of Shiva which for miles around is the cynosure of the pilgrims proceeding towards the sacred city from every part of India. The narrow streets are full of beautiful white cows adorned with garlands of flowers and having the *Trisula* of Shiva stamped on their hind quarters."

"The speciality of the *Mathura* district in the matter of copper and brass ware is the manufacture of small images of Hindu gods, and chiefly of the images of the infant Krishna. These are not made by the ordinary brasssmiths or the Thatheras, but by Sonars or (goldsmiths). The patterns are archaic and have certainly altered little since the beginning of the present century, when many of them were figured in Moore's pantheon. Small bowls which by means of a siphon concealed within a cone rising from the centre of their brass, employ themselves when the liquid poured into them has reached a certain level, are made in several districts. The *Mathura* form of this toy is a brass bowl which under the name of *Basdev Katora* has a fairly general reputation amongst the pilgrims from all parts of India who visit the holy land of Brj. On the top of the cone appears Vasudev carrying the infant Krishna and the bowl empties itself when the water within it rises to the feet of the child. It will be remembered that immediately after Krishna's birth Vasudev carried Krishna across the Jumna from Mathura to Gokul in order to save him from the Massacre of the Innocents which had been ordained by the Hindu Herod Krishna. The Jumna was in flood but, on the feet of the holy child touching them, the waters of the Jumna receded leaving for Vasudev a dry path across the river." §

§ Birdwood, "Industrial Arts of India"

§ Dampier "Monograph on Copper and Brass Ware of N. W. Provinces" p. 34

Moradabad is famous for tinned and lacquered work.

Moradabad Tinned Work Brass articles are plated with tin and the patterns are then engraved so that they show the brass ground. In place of tin, a coating of lac is now used more generally, the lac being black, blue, or red. Black lacquer work is generally the best, the blue and red being the cheaper and worthless forms; it is a pity that the latter are encouraged in these days as a result of the principle of small profits and quick returns. The

Lac work lacquered work is performed in the following way; a pattern is first traced on the vessel covered with lac and then engraved. The lac from the other parts is removed by heating; the lac is finally pushed into the engraved portions and the rest is cleaned and polished.

Lucknow was once a famous place for Mahomedan ornamental ware, but after Mutiny and after the annexation of Oudh, the industry is reported to have declined there is practically no demand for its artistic goods among the Europeans. The articles made at Lucknow for local use are of good quality and include Khâsdâns, Pândâns, Badhnas, Senis, Deghchis, Patolas, &c.

Mirzapur Mirzapur is a great centre for the Manufacture of Hindu utensils in the province, lotas, thalis, batuas, etc., forming the usual list. Farukhabad also produces strictly domestic articles generally used by the Mahomedans. Besides these big centres, smaller places like Jhansi and Lalitpur have a considerable trade in brass animals, while Hamirpur and Muttra have a fair trade in small images or idols of the Hindu gods.

Bengal Bengal cannot boast of good artistic work in brass to compare with that of Benares, Madura, Jaipur or Tanjore. The following are the chief centres of the trade in copper and brass articles —Burdwan and Midnapur (Kansha plates), Nuddia, Pampatti,

Chittagong ; Murshidabad, Malda, and Shahabad (Brass and Bellmetal) ; Chhota Nagpur (Brass and Pewter) ; Dacca and Mymensingh (Iron and Brass ware). At

Domestic vessels,

some of these places, besides the usual domestic utensils, brass toys and mirrors, idols of gods and goddesses, models of vegetables and fruits, and other artistic work is turned out

Toys

Besides these several brass foundries make a large variety of things, to meet the new wants created with the increase of wealth and love of

Brassfoundries

luxury, among which may be mentioned locks, padlocks, hinges, chains, doorrings, handles, penracks, inkpots, scales and weights, fittings for harness and carriages and for scientific-instruments.*

The Burmese do not use copper utensils and there are only 60 persons returned in the census returns

Burma

as copper workers or sellers Brass also is not widely used in Burma and is chiefly associated with religious acts For these reasons "there is no copperware and nothing to correspond to the hammered *repousse* panels of the Punjab, the encrusted work of Tanjore or the quaint shapes and ornamentation found on the copper utensils of the Thibetan frontier. In brass too there is little wrought work strictly speaking, and it is difficult to associate ideas and artistic temperament with the heavy nature of the castings... The brass-work of Burma is bound up with the philosophy of Gautama Buddha and with the humble work-a-day life of the people. In the forefront there is the cast and graven

Images of Buddha

image of Gautama, seated calm and placid, and gazing from its dark niche beside the white pagoda, over the level plain to where the blueblack trees shut out all further view. The whole figure is a fitting symbol of Buddhism expressive of the unalterable, passionless, impersonal nature of the law of cause and effect. In pose it is self-contained, with no suggestion of past or future movement and, being roughly pyramidal in form, is in the position of most stable equilibrium.

*Mukkerji Monograph on the Copper and Brass ware of Bengal

Seated crosslegged with the arms by its side and enfolded in a monk's robe there are none of distracting suggestions of the uncouth images of India, and this by no chance genius of the local artist, throughout the country these images are the same in attitude, in expression, in all details as to the fall and number of folds to the garment, and in the conventional shape of the hands and feet *** Besides the cast images of Buddha which are familiar throughout the country, wrought brasswork does

Wrought Work not occupy an important place. Wrought brass work includes spittoons, limeboxes,

the mouthpieces and the bellshaped ends of the trumpets, and cymbals. The bells in Burma are of two kinds, the heavy bells which are seen in the pagodas hung by

Bells and Gongs contorted dragons to a crossbar which are struck, by those wishing to acquire merit with deer's antlers or bars of wood. There are also small triangular gongs with upcurved horns at the outside, lower corners. However on the whole the industry is in a backward condition in Burma.

The Central Provinces produce little artistic beyond what is immediately needed for the domestic purposes. Nagpur, Bhandara and Pauni are the chief centres in the Province where some of the artistic work in brass, bellmetal, pewter, and

Artistic Work copper reaches a fair degree of excellence, *e g*, the inscribed and scroll work on lotas, hand-lamps, candlesticks, drinking cups, bells fountains, etc. Other places of importance for the industry are Brahmapur, Chand, Chikhl, and Maddar Among the ordinary list of

Domestic Articles the articles are found pots and pans, bowls, dishes, and lotas for domestic use, the worshipping or sacrificial vessels, and ornamental ware for

Ornaments women, *e g*, Bangles, Rings, Earrings, musical instruments, *e g*., the Ramtulas, and Turbis which are

“ Monograph on the Brass and Copper Wares of Burma, ” by H. L. Tilly

made either of copper or brass and chains, etc., for cattle. The artistic and ornamental patterns show inscribed and scroll work some of which is very effective. A common example is a lota, the upper and lower portions of which consist of inscribed brass, while at the centre is a ring of burnished copper of varying breadth, the effect being particularly pleasing. Lamps also of graceful shape and charming workmanship are turned out but only when specially ordered. Patterns of any description are wonderfully well copied, but the capacity for original design is seldom seen. A tendency is observed to deteriorate the quality of the locally made brass by the addition of more zinc, which makes the alloy cheaper and more easily worked.

Madras Presidency enjoys a good position in the production of copper and brass articles of artistic design, the ornamental work of Madura, Tanjore, Nellore and Vizagapattam being considered the best of its type in India. Among other countries may be mentioned Maddagiri, Nagamangala, Karatgiri, Magadi, Belur, Tagari, and Sravan. "The manufacture of fine ornamental and bronze work in the shape of many-branched lamps, sacrificial utensils, images, etc., for which Southern India was once famous has become an extinct art . . . The collection in the Madras Museum from Vizagapattam of little brass figures riding on horses, camels, elephants, etc., which for skilful modelling, finish, and a certain irresistible grotesqueness of expression are, as Sir George Birdwood writes, the finest he has ever seen."

Tanjore Work "Tanjore is now the chief centre for metal work and the three main varieties made there consist of combinations of copper and silver, and of brass and copper, and graven brass. The incrusting of copper with silver is a modern adaptation of an old art and the demand for these wares is almost entirely European. The figures on trays, vases, and caskets are taken from the Hindu Pantheon, and the floral decoration is conventional. Brass trays and plates into which thin plates of copper are let in or damascened

with crude representations of gods are made at Tirupati. The pilgrims who resort to the local temple support the industry. There is also a small trade in brass and copper deities of local manufacture. At Nellore exists an industry in pierced brass trays engraved with mythological figures. An interesting type of brass work is carried on at Belaguntha and other places in Ganjam, in the form of grotesque animals and human figurines cast by *cire per due* process, which are said to be used as wedding presents by the hill tribes of the Khutîâ Khônds.

Madura

At Madura, brass models of lizards, the praying monks, cobras, frogs and other animals are made, well executed samples of the industry are obtainable on special orders. At Kurumbalur in Trichinopoly district there is an interesting industry in the manufacture of brass toys

Kurumbalur

and vessels inlaid with zinc. The temple bells of India are celebrated for the depth and purity of

Zinc-laid Articles

their note and those of Madras are distinguished above all others by their stately architectural forms: the handles are generally crowned with a group of puranic gods sculptured in full relief." * Travancore has a flourishing brass and copper industry.

Travancore

Almost all the household vessels in high class or middle class Hindu families are of brass, copper or bell-metal. "In Travancore bellmetal cauldrons and copper cooking pots are made on a colossal scale, as they are in great demand for the feeding houses attached to the temples. Some of these in use at Trivendram feed 5000 persons at a time and are so deep that a boy can conveniently swim in them if filled with water" ‡

The chief centres of brass and copper manufacture in the Bombay Presidency are Nasik, Poona, Ahmedabad, Bombay and Jaipur. Besides these there are several places of minor importance which

*Imperial Gazetteer of India, Madras, Vol I, p. 65

‡Nagmaiah, "Industries of Travancore," Madras Industrial Conference.

specialise in a few articles, *e g* , Jamnagar, Lmbdi in Kathiawar for Nutcrackers, &c , Patan, Jambusar, Amod, Baroda, Ajmere, &c Sir George Birdwood writing of the artistic and ornamental work in the Bombay Presidency gives the first place to Ahmedabad. "In the Bombay Presidency Ahmedabad, Nasik and Poona have always been famous for their copper and brass work. Besides the ordinary pots and cups the braziers of Ahmedabad

Ahmedabad

make very graceful and delicately cut brass screens (possibly derived originally from the beautiful brass gates at Shah Alum's Tomb) and *pândâns* for holding betel leaf (*pân*), small boxes of very graceful form covered with the most delicate tracery and known to Europeans as spice boxes Their wares belong to two chief classes . the first of copper, domestic pots, jewelry-caskets, and ink stands ; the second of brass, sweetmeat boxes, spice boxes (*pândâns*, &c), rings, lamps, idols, and chains. They make their own brass in the proportion of 4 parts of copper to 3 of zinc. A good deal of iron work is also done at Ahmedabad There is a large manufacture of idols in all

Nasik.

metals at Nasik and at Poona. Good brass utensils are also made at Kelshe and at Bagmandi in the Ratnagiri Collectorate Bells for bullocks are a speciality of Sirsangi in the extreme eastern limits of Paragad in the Belgaum Collectorate. The most active industry in the town of Bombay is

Bombay

the manufacture of brass and copper pots and other utensils in universal use among the natives of India The copper bazaar opposite the Mumbadevi tank is the busiest and the noisiest and one of the most delightful streets in the native town."*

The industry of Ahmedabad in copper and brass in Ahmedabad is much changed since Sir George

Ahmedabad Work

Birdwood wrote the above in the eighties of the last century. The artistic ware of this place is no more

* Sir George Birdwood, "Industrial Arts of India," Vol. II, p 160.

so prominent, though the industry of making domestic utensils is a fairly prosperous one, and has undergone considerable expansion in recent years. The quantity of brass made in Ahmedabad has appreciably diminished on account of the cheapness of the imported product in a form suitable for ready working up into utensils. Both copper and brass sheets are brought from Bombay by regular wholesale dealers, who are generally Mahomedans of the Shia or Dandi Bohra sect, and who sell them retail to the respective coppersmiths. Though the principle of working in large batches is followed in this city as in others, there is not sufficient combination among coppersmiths to enable them to buy their wholesale lots themselves and to save the profits of the middleman. The industry is not in the hands of the regular caste of the coppersmiths, alone, but as in other places the workmen are derived from different castes among whom the Lohars or the blacksmiths are the most prominent.

The brassware of Nasik is held to be very superior in make and polish. all of this is generally made

Nasik Industry

from the sheets of copper and brass imported from Bombay. A little brass and bellmetal is smelted by the Tambats in Nasik, and some of the copper used is made from old and broken pots. The alloy or

Making of the Vessels

the metal is generally fused in crucibles put in the furnace, which is a pit. The wrought vessels are generally made of two pieces, one upper and one lower, separately beaten into shape and soldered with brass, borax (or savagi), and navasagar (or salammoniac). There is generally a division of labour, bands of five or six men engaged upon the same vessel. The tambats do

Division of Labour

not give much polishing beyond a rough scrubbing with a mixture of powdered charcoal and tamarind pulp, followed by beating with a small hammer till the whole surface of the vessel is covered with little facets. The polishers or the charakwallas are all hired servants, they fix the pot to the lathe and scrape with a small tool called *Randha*. The

Tambats and Kalai-kars are like Charakwad ellas the hirservants of the Kâsârs. They are supplied with the metal and are paid for working large copper and brass vessels at the rate of Re. $\frac{1}{4}$ per maund and for small articles Re 1 per pound.* The wage for casting is paid according to the size and shape of the article made. In Nasik, as there is no lack of work, the Tambats are well off, being generally well-housed and well-fed. The Kalai-kars, though poorer, have regular work and are by no means badly off, as most of them are free from debts; their work does not extend to more than nine hours per day. Nasik brassware is in good demand not only in the local markets but

Demand for the Nasik Ware even as far as Gujarat, the Nizam's territories and the Central Provinces. The trade is almost entirely carried on by the Kâsârs who either get orders from dealers in Bombay and other chief trade centres, or send their agents, or themselves go, with a cart or laden bullock or pony to smaller weekly markets or to the Maheji fair in Khandesh, and dispose of them to the village shopkeepers or to well-to-do husbandmen. In this way a bulk of the unpolished product made by the Tambats finds a market.

But the chief growing demand in Nasik itself is from pilgrims, almost all of whom take away some things of the graceful and highly polished smaller brassware.

The copper and brass industry of *Poona* is progressive. Besides the Kâsârs and Tâmbats who are directly connected with the selling and the making of the brass vessels, other castes like the Jingers, Otaris, and the Kunbis also work in the same metals. The details of manufacture and other industrial conditions are quite identical with those available at Nasik and so a description of these is unnecessary. The Jingers mostly do the finer kinds of brasswork, *e. g.*, making false jewelry, gilding clocks, turning metal, casting and polishing goods, making locks, sharpening swords and knives. The Kunbis who have recently taken to

* Bombay District Gazetteers, Nasik, Vol. XVI, p. 146-149.

brasswork are of two types, the Ghadnars or beaters, and the Otnars or casters. The work of these Kunbi coppersmiths appears to be of entirely a subsidiary character. They use the old pieces of brass or copper left by the Tambats, the remains of copper sheets punched at the mint or the cartridge factories and the old broken pots. For melting their alloy they use iron cups instead of clay crucibles used by others. and as the cups are eaten up, they require four such pots for every 250 seers of brass smelted.

The articles of copper and brass made at Poona may be arranged under 14 groups, those used in

The Articles made at Poona

the kitchen, those used in storing and carrying water, articles used in serving betel. musical instruments measures, lamps, dishes and vessels used in worship, images, peasant jewelry, toilet requisites, appliances used in the dining hall but not for drinking or eating, miscellaneous ware and toys. "Poona brassmaking came originally from Ahmednagar, all of the coppersmiths from the latter place have now moved to Poona. Pen and Revdanda in Kolaba which used to make considerable quantity of ware are almost entirely without

Competition between Poona and Nasik

work. Chandor is declining, and though the practice of pilgrims bringing away Nasik brassware will probably serve to keep up the demand at least for the higher class of articles made at Nasik, unless they change their system the whole of the Nasik trade in ordinary cooking and drinking vessels will pass to Poona. The Poona coppersmiths are able to undersell their rivals by adopting the union of combination among the workers and separation among the articles made is the secret of cheap production. The cooking and watervessels are all made of one size and of one shape. And in making it each vessel is passed through a succession of groups of workmen whose whole attention is given to perform one stage of the work quickly and thoroughly." The ease with which Poona trade in ordinary vessels is able to crush down that of smaller centres shows the general effects of increased efficiency,

due to better organisation of the industry, and to more specialised division of work.

Bombay is perhaps the largest centre in India of the copper and brass manufacture "Bombay and Ahmedabad produce large quantities of copper and brass vessels which are sent to almost every part of western India." The work of the Bombay craftsman is described to consist of household utensils, lamps, chattis of all shapes and sizes, and water-pots and *lotas* of all descriptions. They are all more or less roughly turned out and devoid of any exterior ornamentation, their only claim to notice being the shape of some, and the colour of the metals and the sheen given by the work of the hammer. The copper bazaar opposite Mumbadevi tank is the busiest and noisiest street in the city. There are about 4,000 brass-workers and coppersmiths, and 5,000 blacksmiths in Bombay."§ Besides at the Mumbadevi, much of the work of manufacturing the vessels is done at a small street near Kandewadi in Girgaum where the noise of unceasing hammering can be always heard from morn to eve. Some of the workers in Bombay also make vessels out of imported German silver sheets, and these are being often preferred to brass specially among the richer class. In Bombay another kind of substitution of the brass vessels is seen and this is by the growing popularity of tinned ware among the poor people. The industry of making vessels out of tinned iron from old kerosene tins is growing under the tactful Bohras; while the great need of cheaper substitute for brass and copper vessels has given employment to blacksmiths who make the larger vessels out of tinned or galvanised iron, and to several of the metal factories. The factories find that there is little margin of profit in the making of brass vessels, so they make either German silver or Aluminium vessels, or prepare some of the tinned and galvanised ware required for carrying or storing water. In spite

* See Bombay Gazetteers, Poona, Vol XV, pp. 170-174 for a complete list of these articles.

§ Imperial Gazetteer, Vol VIII, p 325.

of the process of substitution the Bombay industry in brass and copper is thriving, mainly for two reasons. The raw product (the sheets of copper or brass) is the cheapest compared to other centres removed from the sea; and there is a ready market for these goods in the expanding city. Moreover, the industry is helped by the immigration of the better class of workers from the districts.

A very interesting place in connection with the brass industry in Bombay Presidency is Jaipur.

Jaipur Industry The art work of this city is praised on all sides and is perhaps superior to Tanjore or Benares work.

visit to the city of Jaipur shows what can be done in the cause of an industry by state protection. The excellence of the manufacture is maintained by the attention given to the same

^a The Art School, State Patronage in the local school of art. The artistic tendencies of the craftsman are cultivated and replenished by the state patronisation of the industry in the use of the brass ware, whenever possible. As a result of this, one is delighted to see all sorts of artistic work in shining brass forming a part of the ordinary furniture in the state buildings. The pendants, burners, tubes and cocks for gaslamps, knobs and handles for doors are all locally made in beautiful designs. The state protection appears to be so thoroughly insisted that the jugs, basins, dishes, pots, spittoons and other articles in the State Hospital, which one might expect in other places to be made of porcelain or enamelled ware, are made of glittering brass in exactly the same shape as seen elsewhere. These brass articles are kept clean perhaps more easily than the imported earthen ware and are decidedly cheaper in the long run. It is no vain hope to expect a similar improvement in the industry if the methods of Jaipur are intelligently followed in other places.

SECTION VI.

General State of the Industry

It might be said in general that the industry is one of the very few in the country that have nothing to complain against foreign competition. Of course, the raw materials copper, zinc, and brass in the form of ingots or sheets have to be imported but no brass or copper ware of the type prepared by the Indian workers is set in hostile array by the foreign manufacturer. The reason for this state of affairs is plain. The character of the goods is so specialised and varying with different provinces that it is impossible for a European factory to turn out these things in machines in uniform lots. Specialisation of work and division of labour are also carried out in most of the large centres, though some improvement may be needed in the smaller centres of production. No machinery is generally used, but a single article passes through the hands of half a dozen or more persons, each of whom knows his part of the work completely well and concentrates his energy on the production of his part to the state of perfection; the result is general uniformity and excellence of the work. Moreover the local manufacturer besides making new vessels is always ready to repair or patch up a broken vessel and also to pay a fair price or barter for a new one when it is no longer of any use. This is a factor of economic importance which enables the people to prefer brass and copper utensils in preference to porcelain or enamelled or even aluminium ones, as the former bring something when out of use or can be repaired when broken, while the latter are entirely useless after a hole or crack has once been formed.

During the last 30 or 40 years the use of brass and copper may be said to have increased among the rural classes, on account of the rise in the standard of comfort after the opening of the railways. This

was helped by a lowering of the price* of copper on account of cheapening of the metallurgical processes, and of the lower freights by competition among the different shipping companies.

Another reason for the prosperity of this industry lies in the great dislike the people, specially the Hindus, have against the use of earthen vessels. This was already pointed out in connection with the popular and religious prejudices in Section II, and has resulted in the exclusion of porcelain and enamel from among the orthodox classes.

Though the industry seems to be a fairly flourishing one, there is a black cloud on the horizon in the form of the continued rise in the price of copper almost amounting to 25 per cent within the last two years. Perhaps this was due to speculation for a time but the increased demand in India for electric traction and lighting is responsible in no small degree for the rise. As a result of the high price of copper, it has undergone substitution in various ways. The Mahomedans whose religious point of view prefer to use tinned copper vessels have to resort to vessels of alloys like brass and bellmetal, and as there is a corresponding increase in the price of brass too, the imported§ enamelled ware has found a firm footing among the Mahomedans and the lower castes of the Hindus. The substitution is carried on to a much greater extent in the case of the large vessels which formerly used to be made of copper or brass are now made from old kerosene tins or galvanised iron sheets, specially for the purposes of holding and storing water. For smaller vessels aluminium is rapidly coming to the forefront, and is preferred on account of its lightness, and cheapness for bulk, while it can resist the action of vegetables and so saves the trouble and expense of tinning. It is difficult to say whether if the process is allowed to work it will be an economic loss to the country as all metals are imported; but it is certain that it will be a very

Increased Prices of Copper
during the last decade

Substitution by Tinned,
Galvanised, Enamelled Iron,
by Aluminium

*See Index figures in Appendix, Table IV.

§See Introduction, pp. 5-6.

difficult task, and will take a long time, to displace the copper and brass industry completely.

Another general feature to be noted in this connection is the rise and localisation of the industries in the large centres with a corresponding fall in small towns and villages. The products of the villages are ousted by cheaper importations from the larger centres where more efficient methods have reduced the cost of production ; such importation has been facilitated by the railways and the improved means of communication. The complaints that one sometimes hears in the larger centres about the depression in the industry are sometimes superficial. It is true that the profits of the individual manufacture have fallen on account of the breaking up of the monopoly, by the simplification of the methods of production. The cheap importation of sheets of copper and brass has done away with the costly furnaces or fusing appliances necessary for the making of brass. But, on the whole, the aggregate profits of the industry at a particular place, as judged by the total production, and the total increase in value after manufacture, have risen, and a larger number of workmen as well as more capital are employed now.

The general statements made above may be corroborated by detailed reports from different provinces of India.

“ In England many of the large industries have become concentrated in certain localities which for this reason or that have an advantage over all other places ; and a similar process is going on in the Punjab due chiefly to the introduction and extension of the railway and to the general improvement in communications. Ever since the Annexation the scattered forges and bhattis of village brass and coppersmiths have been gradually disappearing and the corresponding population of the centres of the industry has increased and in many towns too the manufacture is languishing. The Multan factories for instance seem to be barely holding their own against external competition and it is

most probable that they will disappear one by one until only the minimum number necessary for repairing and petty work remain. Again, in spite of the great increase in the population of Rawalpindi City and cantonment during the last twenty years, the industry is by no means thriving, and in Lahore the manufacture is decreasing and the import increasing. The most hopeful places seem to be Rewari, Delhi, Panipat, Jagadhri, Hoshiarpur, Amritsar, and Gupianwalla for copper, brass, and kansa work and Peshawar for copper ware. It seems likely that at these places the manufacture will increase at the expense of the rest of the Punjab and that it will hold its own indefinitely against the N. W. Provinces and Kashmir factories except for the peculiar articles for which the latter are already famous.”* However, the hope has not been entirely fulfilled and the localisation of the industry is not limited by geographical or political boundaries. Since the above was written, Mr. Latif[§] has reported that “Punjab imports annually about 7,000 and 8,500 Maunds more of brass and copper ware respectively than it exports; the imports consist of hand-made articles chiefly from the United Provinces, preferred for their superior art and finish”.

The domestic and art ware of United Provinces is therefore
United Provinces
decidedly superior to those of Punjab and the adjacent provinces. Besides the ordinary and the artistic ware of the province already noticed, several factories and foundries on modern lines are also engaged in the industry. The Aligarh postal workshop is doing good work in various kinds of brass articles like padlocks etc. While the engineering workshops at Lucknow, Jhansi, and Gorakhpur also do some work of this character †

In Bengal also, “the manufacture of copper, brass and
Bengal
bronze utensils is perhaps the only industry which has not suffered from foreign competition or machine made articles. Several attempts were

* Johustone, Monograph on the copper and brass ware of the Punjab 1888

§ “Industrial Punjab” by Mr A Latif, 1912

† See A C Chatterji's Note on the Industries of United Provinces.

made to turn out such articles by the aid of machinery, but they have not yet succeeded. The industry all over the country may be said to be a prosperous one. Almost every town of note has its braziers to make the articles, and the shops where these are sold. Besides, hawkers go from village to village exchanging new vessels for the old or selling bright utensils for cash. Owing to the greater purchasing power [?] placed in the hands of the people by the expansion of the export trade in agricultural produce, every household now possesses more utensils than it did in former times and a larger assortment of such articles is now presented to the bridegroom on the occasion of every marriage, which the bride's father has to do in compliance with ancient custom. The industry is, therefore, a thriving one and there is no sign of its receiving any kind of check in the immediate future. Although porcelain dishes and cups are gradually coming into fashion and enamelled ware has appeared in the market, the use of such articles is extremely limited and does not seem to have made the slightest impression upon the present prosperous condition of the brass and bronze industry".*

The industry is favourably reported also from the Central Provinces. "The gradual opening up of the Provinces to the network of railways has raised the standard of comfort among the rural classes by giving them a better market for their agricultural produce. The demand for the products of the brass and coppersmiths has thus increased and at the same time the decreased cost of carriage has tended to specialise the industry to certain districts or portions of districts that possess special advantages in production.' On this account though the industry in villages has undergone depression, some of the centres like Nagpur, and Bandhana are flourishing.

* Mukkerji Monograph on the Brass and Copper Ware of Bengal, 1894.

From the account already given of the industry at various centres in Bombay Presidency, it will be clear that the industry is in a flourishing condition. As in other provinces the tendency for localisation and centralisation is irresistible. Thus the village brasssmiths complain of the market being flooded by cheaper vessels from the large towns. Even among the large centres like Nasik and Poona the competition for superiority seems to be decided by better methods of working on large scale. Besides the production of articles of domestic and artistic type, a considerable amount of work in brass casting etc is done in connection with the large number of workshops attached to the cotton and other factories. Several workshops (like Nanu's Brass Works) in the city of Bombay are run privately for the manufacture of articles of Brass to compete with foreign articles (*e. g.* bedsteads, locks, &c.) and the nature of the work turned out is quite creditable. The only difficulty is that they cost a little more than the imported articles, being made in small quantities.

Factories for Brass Work The several factories for moulding and stamping copper and brass vessels have not thrived in competition with the old industry. The reason is that the vessels made by machinery are unpopular, as they are thinner than those beaten out by hand, and so do not stand the daily rubbing and scrubbing. A second fact to be noted is that the profits of the industry have been kept low by competition and efficiency of work among the workers by manual labour, and so the use of costly machinery for this purpose does not pay even for the interest of the capital invested nor for the wear and tear. Consequently many of factories started for working in copper and brass have preferred to work in other metals like German Silver and Aluminium or even Tinned iron. Thus it would seem that, on the whole, the present industry of making copper and brass ware is fairly prosperous and sufficiently well organised to withstand competition.

In spite of the general report of favourable kind on the

The Condition of the Art-
istic Ware /

manufacture of ordinary ware, it must be mentioned that the ornamental and artistic

ware is degenerating. Though perhaps the demand for this has not much decreased but on account of the pressure of work in these harder times of competition and cheap prices and for lack of true and correct appreciation of Indian artistic ware, the quality of the work at present is distinctly inferior. This may also be an effect of the interference in direct art education of the people who already possess the tradition of a system of decoration founded on perfect principles, which they have learnt through centuries of practice to apply with unerring truth.

Western Influences.

But putting aside the question of direct-art education, it cannot be said that

Western influences has indirectly had a favourable influence on Indian art. The ordinary western public is not sufficiently well educated in the principles of Indian art to be able to distinguish between really good or merely showy patterns and provided it gets its money worth of gods, wild beasts, and jungle is generally content. The Indian artificer must cater for his market, and as the demand is brisk, cares little whether the pattern he turns out is of poor design and worse execution. In dealing with Benares and Moradabad work mention had already been made of the unhappy transference of native decorative patterns to articles of purely European design and use. This kind of work will probably increase with the growing popularisation of English habits among natives. The present may be merely a period of transition and pure Indian art may yet see a revival, but there is no doubt that the market of to day is unable to call forth from the modern Indian handicraftsman the same quality of design and workmanship that his father displayed, when the workman lived at his master's house and wrought his craft stimulated alternately by fear of the lash and hope of large reward."* It is difficult to exactly gauge the causes that have

*Dampier Monograph on Copper and Brass Ware of N W Provinces and Oudh, p 36

led to this fall in brass and copper artistic ware, which has been experienced in other places also. However the most efficient means of reviving this art would be to introduce teaching facilities for this art in the Art Schools of the large towns, and to start small art schools for the same purpose in those centres of the trade where such schools are not already existing. The example of Jaipur State was already pointed out as showing what could be done in the cause of the industry by systematic and considerate help from the State.

SECTION VII.

Raw Materials for the Industry and their Sources.

Though at present all the copper and brass used in India are imported, there was a time when the Indian Industry was self-sufficient. Copper mining and brass making were practised in various parts of India. Signs of old workings in the Copper mines are found in Rajputana, in Kashmir, Narnaul in Patiala, and in Kulu, Kamaon, and Sikkim in the Himalayan hills. It is not definitely known when the working of these mines had stopped; but the exhaustion of the better ores, and the importation of cheap copper from Europe helped by low freights must have been among the causes that led to abandonment of the working of the mines.

All the Copper required in India is imported mainly from the United Kingdom and Germany in various forms, as ore in very small quantities, as old copper for remanufacture, as unwrought copper in the form of Tiles, Bricks, Bakes, and ingots, and as wrought copper in the form of braziers sheets 'lametta' and mixed of yellow metal. The value of the annual imports varies from Rs 20 to 30 lakhs with the price and with the prosperity in the country. The statistics of imports, exports, and provincial distribution are given below.—

		IMPORTS.		EXPORTS.	
		Cwt.	£.	Cwt.	£.
	1907-08	315,288	1,375,640	1907-08	8,379 38,343
	1908-09	496,405	1,814,245	1908-09	2,044 9,303
	1909-10	506,599	1,762,304	1909-10	2,036 9,092
	1910-11	732,914	2,473,078	1910-11	2,906 12,474
Average	1903-1907-08		1,374,378	1911-12	70,419
	1911-12		1,853,060		

Provincial Distribution of the trade in 1910-11.

	IMPORTS.	EXPORTS.		IMPORTS.
	Cwt.	Cwt.		Cwt.
			From United King-	
Bengal	169,290	982	dom	417,534
E. B. Assam.	2	...	Germany	193,774
Bombay	469,291	1,415	France	24,693
Sind	11,941	10	China	87,843
Madras	77,896	1		
Burma	4,494	2		

It will be seen that Bombay imports the largest amount 469 thousand cwt out of a total 732 thousand cwt.; Bengal follows next with 169 thousand cwt. ; Madras is next with 77 thousand cwt. It should be noted however that these figures do not indicate the amount of copper worked up by the respective provinces. For example, much of the copper imported by Bombay is only for distribution to Central India, Rajputana, United Provinces, and even Punjab. The same also holds good for the

Imports and Exports of BRASS

B - A

	IMPORTS.		EXPORTS.	
	Cwt.	£.	Cwt.	£.
1907-08	21,736	86,436	3,114	18,913
1908-09	24,579	89,171	2,111	3,592
1909-10	16,799	62,224	1,975	13,323
1910-11	18,594	70,099	2,440	15,202

Provincial Distribution of the Import and Export trade in 1910.

	IMPORTS.	EXPORTS.
	Cwt.	Cwt.
Bengal	4,790	651
East Bengal and Assam	1,438	0
Bombay	7,450	1,726
Sind	1,075	16
Madras	879	27
Burma	2,957	20

Share of different countries in the Imports of 1910-11.

United Kingdom	10,604
Straits Settlements	1,391
Germany	1,642
Italy	1,867

Wholesale prices of Imported Copper at Calcutta during a period of 40 years —

1873	100 (as standard)
1861-65	99
1866-70	85
1871-75	94
1876-80	86
1881-85	76
1886-1890	72
1891-95	76
1896	82
1897	81
1898	82
1899	95
1900	110
1901	111
1902	97
1903	92

Import Trade of Bengal.

It was already pointed out that the price of copper is steadily increasing. The price of copper in 1883 at Nasik (as reported in the District Gazetteer) was Rs 44 to 45 per cwt. The price of copper in Bombay in July 1912 is Rs 68 per cwt. The price of brass also has undergone a corresponding change; it used to cost in 1883 at Nasik Rs. 34 to 35 per cwt. in Bombay the price now is Rs 54 per cwt. The effect of high prices on the industry and the substitution of enamelled ware have been already referred to

The brass used in India is also imported generally in two forms wrought and unwrought. Some brass is made now in India by the brass-smiths on the spot, as it used to be, but the quantity so made is small. At the present high price of copper and with the difficulty of melting copper, it is cheaper for them to import brass ready made in the form of sheets. However, when brass of special quality is required it pays the copper smith to prepare his own brass. For this purpose old copper-plates, or broken or disused copper vessels, copper shavings, and the refuse of the scrapes of the metal from the mints or the cartridge factories, are used. The copper is first melted and zinc is then added in the required quantity of the preparation of brass of the particular quality. The old or broken vessels of copper are easily made available by the fact that they are never thrown away but stored till sold to the itinerant dealers or hawkers of brass ware, or bartered for new vessels to the manufacturer. The figures for imports and exports are given in the Appendix, from which it can be seen that the quantity of brass imported is nearly 20 thousand cwt. annually its value being about 12 lakhs of rupees. Bombay does the largest amount of trade in both imports and exports, while Bengal stands second.

Foreign imports,

There are several other alloys of copper in use also. Brass in general contains 4 : 3 or 2 : 1 of copper to zinc. Other Alloys of Copper used in the Industry, Bharat or Kansa is another alloy containing the two metals in equal proportions with a slight admixture of lead. This metal corresponds to what is called Princes' metal, and being more easily workable and cheaper is used for casting cheap ornaments, cheap pots etc. Phul or Bell-metal (Kansa) contains tin instead of zinc the proportion of the copper and tin being about 7 : 2. Phul is a little more costly than brass but is preferred for ornamental ware hukka-stands, and some domestic articles; its use is precluded by the fact that it costs about one and a half times as much as brass. This alloy has been replaced to a certain extent by German silver which contains copper, nickel and zinc with traces of lead and tin. This is valued on account of its colour and polish though it is more costly than brass.

Zinc, therefore, is an important element besides copper in all these alloys and as such is imported in fairly large amounts. Zinc, Knowledge of Indians, Zinc was known to the Hindus since a very long time, itself and its compounds being frequently used in medicine. According to some authorities the knowledge of the metallurgy of zinc was transferred from India to other countries. At present little zinc is prepared in India and so a great bulk has to be imported. There is not the least doubt, however, that up to less than a century ago zinc was extracted from the carbonate (smithsonite) at Jawar or Zawar in Udepur State in Rajputana.

The value of the zinc imported amounts to nearly 20 lakhs of Rs. (in 1907 it was £111,000) while Imports of Zinc, the quantity is still larger if we take into account the zinc that is sent as brass or German silver the total swells to about 34 lakhs. The figures for the average imports (after deducting exports) for the five years 1903-1908 are as follows :—

Zinc as metal	£ 131,569.
Zinc as brass	£ 48,056.
Zinc as German silver	£ 127,447.

The other materials required in the industry, are the fluxes and the solders. These include
The fluxes and the Solders common salt, borax (schag or tunkal) soda (saji), salammoniac (Navshadar or Navshagar), Alum and Mercuric chloride (Rav-Kapnr). The addition of the last three is thought to improve the colour of the metal or the alloy. It is a considerable advantage to the country that many of these things are made in some part or other of India

The solders used are of a large variety and the composition varies throughout the country. For copper
Solders vessels a solder containing 4 parts of copper to one of tin is used; while for Phul or bellmetal vessels the solder contains 7 parts of this alloy to 1 of pewter; a solder in general use for brass and other vessels contains equal parts of copper and zinc. This is ground into powder and moistened to form a paste in this form it is lightly spread over the joints and then fused and hammered in.

Having seen the wants of and industry and their supply by foreign imports, let us see how far it is possible to reduce the imports by manufacture on spot.

As far as is known at present, the ores of zinc are not at
Extraction of Zinc in India all common in India, they have been found associated with the antimony ores near the Shigri glacier in Lahawal, with the ores of copper, lead, and silver near Bawdwin in the Northern Shan States, and with copper ores of Sikkim. However no successful attempts to extract the metal on large scale have yet been reported. The richness of the ore is not sufficiently great to allow the working of the metal alone in the present state of the metallurgical industries of India. It is hoped that the metallurgy of zinc will develop later on as a side industry with the smelting of other metals like Copper, Lead or Silver with which it occurs; but till then we have to be content with the imported article.

The increasing demand for copper in India, due largely to the spread of electric power, and the high prices prevailing recently have directed attention to the copper deposits of India. The value of the copper imported into India in 1911-12 was nearly 2 millions sterling which forms more than ten per cent of the average total imports of minerals and nearly twenty-five per cent of the total value of the imported metals. The demand for copper is still further expected to expand as a consequence of the numerous projects in contemplation for the development of electric power.

Copper was formerly smelted in considerable quantities in Nellore district in Southern India, in Rajputana, and at various places along the outer Himalayas in which a persistent belt of Killaslike rock, from Kabul in the Northwest to Sikkim and Bhutan in the East, is known to be copper bearing in numerous places as in Kulu, Gashwal, Nepal, Sikkim, and Bhutan. Copper ores are also widely distributed in the Narnaul district of the Patiala State specially in the Southern half where they were extensively worked in the past. In Chhota Nagpur, several attempts have been made to work lodes reputed to be rich in the metal, but in all such attempts the ore has been smelted for the metal alone and no effort has hitherto been made to utilise the accompanying sulphur as a bye-product. In the Singhbhum district a copper bearing belt persists for a distance of several miles and includes several lodes, some of which, at Rajodha, have been proved by borings to persist to a depth of over 1,000 feet. Copper pyrites occur in the Simla Hill States and also at Dariba in Bikaner State. At Baragandha in the Giridh sub-division of Hazaribagh, a low grade ore body of about 14 ft. in thickness has been prospected by shafts to a depth of 350 feet, and an unsuccessful attempt was made a few years ago to work the ore. Recent work has proved the existence of valuable lodes in Sikkim, the copper being associated with Bismuth, antimony and Tellurium.*

* Sir T. H. Holland Sketch of the Mineral Resources of India, p. 29

The copper ores in the Singbhum district of Bengal have been the subject of exploitation on European lines by various companies during the last fifty years, always with disastrous results in some cases due to the poor character of the deposit attached and in others to the unwise expenditure of limited capital on expensive plant before the deposit had been proved. Recent work by means of the borings made by the Geological survey shows that generally speaking the ores of Singbhum are of low grade, and on the whole just below what is likely to be payable except when working with very large quantities of the ore. Prospecting in the Tistavally of Darjeeling district seems to give favourable results *

The copper ores, at Matigna[†] in Dalbhum, occur as rather indefinite lodes inter-bedded with Dharwar phyllites and schists. Sometimes the ore is collected into fairly well-defined bands, but very frequently it occurs in the form of grains disseminated through a considerable thickness of schists so sparsely as to be unworkable. Whereas if the same amount of copper mineral had been concentrated into smaller thickness of schists, workable deposits of ore would have been found. When concentrated as at Matigna the ore may be of fairly high grade and well worth working if proved to exist in sufficient quantity to render it worth while to erect the plant necessary to handle large quantities of the ore. At some places as at Rajodha some rich ores are obtained : but in general the ores seem to be very poor, indeed as seen at the outcrops, where they have not been removed by the ancients.

However, the latest report about the copper deposits of India is more hopeful. " In the course of next few years it is to be hoped that copper will take an important place among

* Records of Geol. Sur. of India, Vol XXXI, pp 1-4

† Rec. G. S. I., Vol XXVIII, p 36.

the mining industries of India. At present the industry is still in the prospecting stage both in Sikkim and Singbhum, although an output of 864 tons of ore valued at £ 2,304 has been reported from the latter district 290 tons of the ore valued at £ 579 were also won in the Myitkyina District* in Upper Burma, and 2 tons valued at £ 4 in Garhwal in United Provinces "§

It will be seen that future of the copper smelting industry is doubtful, at least so long as the processes for the utilisation of the other elements with which the copper occurs are not adopted. It will take some time before India could manufacture different metals like Bismuth, Antimony, Tin and utilise the sulphur found in copper ores for making sulphuric acid; till then, we have to be content and satisfied with the imported metal. So also brass has to be imported, as it is so costly here in India to melt together the two metals copper and zinc if imported separately; while for the factories that smelt and extract the metals the preparation of alloys like brass or German silver is very cheap as it constitutes a kind of utilisation of the waste heat of the furnaces. This heat is utilised in melting the alloys and rolling them into sheets. Moreover, there is little margin of profit in the making of the alloys by themselves and so it does not pay except in connection with the larger smelting industry. Thus we have to depend upon the foreign supply for both the metal copper and its alloys for a pretty long time to come.

* "159 tons of copper were extracted during 1911"—Letter dated 24-6-12—addressed by the Secretary of the Mining Company to the Calcutta papers

§ Records of Geol Sur Ind, Vol XII, p 170 Report of Min Prod. during 1909-10

SECTION VIII.

Suggestions for Improvement in the Industry

It has been already seen that industry is more successful if worked on a large scale. The nature of the work itself is such that efficiency and cheapness could not be attained in the absence of perfect division of labour which in turn necessitates production on a large scale. It was also pointed out that the nature of the work does not permit of any lowering in cost of production by the introduction of costly machinery. On the other hand, it was noticed that the factories for working brass and copper could not thrive against the competition of the indigenous workers and their manual and personal labour. Any line of improvement or progress on the old system, therefore, should be rather slow and thoughtful.

The workshop
the factory

If we describe our present methods as coming under what is called the artisan

system, our aim should be to raise the industry to the workshop system but not to the factory system; that is to say, without encumbering and embarrassing ourselves with costly machinery we should modify our methods in a cheap manner, by the

Introduction of Hand
Machines,

introduction of such small pieces of machinery which save labour and time

but which do not require a high initial cost. For example, the ordinary lathes used by the copper smiths are irregular and discontinuous in their working and can be replaced by a little more costly machines from England or Germany which would run continuously. Again, small hand machinery could be used for cutting or punching sheets of copper and brass into circular and oval discs etc. of required size. Small hand presses could also be used for stamping out pieces of sheet into various forms and with less labour and in less time. Small machines would be useful for making small buttons or boxes etc. of brass; simple pieces of machinery could be used for shaping brass and copper vessels instead of the rough process of hammering used at present. In general, the tendency to introduce cheap hand-

machines in place of manual labour should be introduced as it would lower the cost of production in the long run. At the same time the failure of many of the copper and brass factories*

Possibilities of
small machines by
power

should not be lost sight of, as showing that the industry cannot bear the heavy expenses of costly machinery. In these days when electric power is getting cheap, it will not be, perhaps, unreasonable or out of place, to expect the growth of this and other industries in small workshops using small machinery worked by the electric power.

The necessity of paying great attention to the industry in the art schools was already pointed out.

Increased Attention to the
Industry in the Art Schools

Such schools should be useful in spreading the ideals of Indian art and also should open new lines of manufacture of such articles as are imported now. Though at present many places, brass locks, and brass castings, and various kinds of instruments are being made, the industry is handicapped for want of intelligent and capable workmen. The finer articles of manufacture like musical and scientific instruments require an amount of skill and intelligence which must be imparted to the workman in the Art or the polytechnic schools.

Besides the manufacture of articles of domestic and general

Development of new lines
in brassware

use, the number of forms in which copper and brass could be worked is very great; and by care and selection the industry could be so extended as to displace many of imported articles. There is no reason for example, why small articles like door hinges, handles, or rings, padlocks, lamps, gas and water cocks, brass stands, wracks and cages, brass buttons, and some of the scientific (mathematical, surgical, chemical or physical) apparatus should not be

* With a view to inquire into the causes of the difficulties experienced by the factories, the writer wrote about 25 letters to different metal factories in India however it was surprising to find that none of them replied, nor was a single letter returned to him on account of wrong address. The writer takes the opportunity of thanking the ordinary wholesale workers, in the industry for much of the information collected.

manufactured in India, and should be imported while the skill and scope of working for the same could be developed here. It is true that many of the brass foundries and the workshops for advanced work do try to produce some of these things, but generally they lack in finish and polish, and sometimes cost a little more when compared with foreign manufacture. It is to be hoped that with more systematic work on scientific lines, and with the help of better workmen turned out from the proposed art and technical schools, this branch of the industry will receive its proper share of attention and development.

It should be pointed out that, to a certain extent at least, better training of our artisans is very necessary at the present stage. For, it can be easily seen that after a certain time when the copper and brass ware has been displaced by Aluminium (as it is already to some extent in Southern India) and tinned, galvanised or enamelled iron ware, the industry of making brass vessels for domestic use is likely to go down. In such a case, if no preparation is made in the form of the variety of openings for the industry suggested above, the copper and brass smiths of India may have to come to grief

One of the reasons why the larger copper and brass factories have not thrived is the large expense they have to undergo in sending their salesman to advertise and sell their goods; very often these agents are not efficient or careful. The articles made by these factories are of a little new type and being generally thinner are looked upon with distrust by the people. In the case of the small capitalist who employs a number of workmen to manufacture the vessels, this item of expense is small or rather becomes a part of his own profit. Going a stage further, it is not impossible for the workmen themselves to combine and co-operate in the manufacture as well as the sale of their goods without letting the middleman to interrupt and diminish their

Necessity of better training for the artisans

The cost of marketing.

Co-operation among the workman for buying and selling their goods

profits. By systematic co-operation along the lines of Co-operative Credit Societies it will be profitable and possible for them in getting the sheet-metal cheaply and also in disposing off their goods at much better rates than what they do at present. Perhaps as is seen in other countries the sheer force of circumstances will soon point out to the artisans, the feasibility and necessity of combination on a larger scale.

	The help needed from the State is of various kinds. This is not the place to discuss how far State help is justifiable ; it has been recognised
State Help	in India and extended many industries like Tea, Jute, Sugar etc. The starting of the departments of
Art Schools	metal working in copper and brass in the Arts schools, as suggested above, though not requiring much
	money, is impossible without State help. It will not be wise to expect the public to shift for themselves and take the initiative
	looking to the interests involved. The industry could be helped in other ways also Thus it has been recommended* that rail-
Reduction in the Railway Freight.	way freights should be reduced for the metal used in the industry <i>e. g.</i> the sheets
	and ingots of the metals imported from large distances.

In conclusion, it is fervently hoped that this brief and necessarily inadequate account of an industry, which has retained and which will retain for a long time to come, the purely indigenous characters of the Indian industrial life, will inspire development along national and scientific lines. At present, the industry may be said to be drifting along uncertain paths according to the fancy of the petty craftsman, whose vision is so narrow and horizon so limited. It needs sincere and sustained efforts on the part of educated Indians to raise this craftsman to the position of an intelligent artisan, able and anxious to improve the quality of his work. We need more mechanical knowledge to come to the help of these artisans who have so far been

* A. C. Chatterji—Note on the industries of the United Provinces of Agra and Oudh.

able to withstand foreign competition ; and we need better type of men as capitalists or managers at the head of these artisans. There are splendid chances in the case of this industry to try the workshop or the artisan system instead of the factory system which has been attended in the west with many social evils. Let us then devote greater attention and harder work, so that this great and ancient industry which maintains its individuality throughout the length and breadth of this vast continent may gather strength and energy necessary in these days of strenuous competition.

Co-operative Village Libraries

BY

Professor Jogindra Nath Samaddar,

B A , F R . E S , F R H I S T S , M R S A

— 0 —

Even the most pessimistic man will have to admit now that the Indian Co-operative movement has achieved a distinct success in rescuing many of the poor rayats of the country from the shackles of *Mahajandom* and there can be also no denying the fact that it is indirectly increasing the wealth of the Country. But it has all along been claimed that the end of Co-operation is not simply “the shaking off the burdens”, or the mere production of wealth. It has been urged over and over that it has greater aims,—or in other words, there are the intellectual and social sides of this movement, which will bring comfort to those sufferers for whom the movement is meant primarily and strengthen the moral character and broaden the mental horizon of the people.

It was to place before the public one of the side lights of the movement, that I addressed the following letter to the Editors of the *Calcutta Dailies*, and it was promptly published by them in their issues of the 28th January, 1909, that is to say four years before this day. I make no apology in quoting it in extenso, as what I have got to say to-day is based on that letter of mine and what could be said then, applies with greater force now. This was the letter —

“To the Editor,

Sir,—The other day, Sir D. M. Hamilton spoke on “Zeminderies on Co-operative lines” by which he proposed that Co-operative credit should be employed to make youngmen Zeminders “with an income of Rs. 200 to Rs. 250 per month besides the honorable position of Zeminder—not a fortune certainly, but sufficient to enable the young men to live a comfortable and honorable life,—not servants but masters—free and independent”.

I humbly beg to suggest that Co-operative credit can also be employed on a like plan to create a large number of "Co-operative Village Libraries" which would be able to do an incalculable amount of good

The credit movement has planted its hold definitely in India and is in fact working wonders. Although the main and direct object of the Co-operative credit movement is to improve the deplorable status of our poor raiyats, still the services of this movement can be indirectly employed to bring about a moral and literal regeneration amongst us. I propose that Co-operative Village Libraries should be started either (1) along with the societies which have been started or (2) individually by the Co-operation of neighbouring villagers with limited liability and with Co-operative credit as its principle. In the former *i. e.* in (1) the nucleus of a small but useful library can be utilised for the benefit of the raiyats,—a good weekly can be subscribed for and the secretary of the society or the Punch may be directed in reading these books and newspapers to the members. I see that there are now at present in Bengal alone some 375 Co-operative credit societies with some 12,000 raiyats as their members. The institution of small village libraries would do an immense amount of good to these raiyats.

Regarding (2) I hardly need to dilate on the necessity of a library which stocked "with readable books" should properly direct the people—what 'to read' and what 'not to read'. Instead of reading anything and everything, books relating to agriculture and industries should be stocked and read—the standard to be decided according to the capacity of the members constituting those libraries. Incidentally the services of the members may be utilised by asking them to collect facts and figures relating to the villages—agricultural, industrial—statistics and all sorts of information relating either to the past or to the present

I need hardly add that these libraries in both the cases may serve as well for centres of innocent amusement. I commend this humble suggestion of mine to all—young and old—including the worthy Registrars of Co-operative Credit Societies and if the

Registrars would kindly try to carry into practice my idea, I may say that a friend of mine is willing to bear a portion of the initial cost of one or two Libraries in the experimental stage

I do not know whether my humble suggestion attracted the attention of all the Registrars of Co-operative credit societies of that year but two of the Registrars very kindly wrote to me two letters from which I make the following extracts. Mr. Gomlay who is now the popular private secretary of a popular Governor wrote to me thus "Few of the members can read and so Libraries could not be very useful yet *Later on, perhaps*" The other one was from Mr M Kuwar Singh who was then the Registrar of Co-operative Societies of the United Provinces. Mr Singh wrote "I have read with interest your letter in "the Statesman" of the 28th January on Co-operative Village Libraries. Your idea is both interesting and original and doubtless in a province which is educationally advanced, there is a field for such libraries My only fear is that in the United Provinces where primary education is so backward, there would be more difficulty so far as villages are concerned Co-operative urban libraries, if started and supervised by some public-spirited gentlemen, would however serve a most useful purpose "

We find that the two Registrars who very kindly considered my suggestion were of opinion that but for the illiteracy prevalent amongst the raiyats, the scheme would be a very useful one. My object primarily was however to make the members of Societies more literate and in those cases where the members were altogether illiterate, my suggestion was that "the secretary or the Punch may be directed in reading these books and newspapers to the members". I venture to believe that this suggestion could be easily carried out, for the Secretary and the Punch are bound to be literate men under the provisions of the law

Thus far regarding the cases of those Co-operative Societies, the members of which are illiterate Let us then take up the cases of literate members, and specially of the urban members. The Rev. I. O'Donovan, an Irish clergyman and a strong advocate of the Co-operative system writing on "Village Libraries" in "the Irish Homestead" the organ of the Irish Agricultural Society thus wrote —

“ Young people educated in our primary schools, and often in our intermediate schools, are intellectually only little children. Their taste requires to be directed. Hitherto, unfortunately, this has been neglected, with the result that intellectually the country is on the verge of being in a hopeless state. It is no exaggeration to say that the literary taste of the people is false. For the most part they read nothing but wretched trash. Beyond the daily and weekly newspapers the only reading matter of the majority of the reading public in Ireland is low London productions, which are neither good literature, nor good morals, papers that often pander to the lowest impulses of man's depraved nature. The least harmful are bad novelettes, perhaps not morally bad, but productive of evil nevertheless, as they are read by imperfectly educated young men and women with no knowledge of life, who are led to believe that what they read of in these books exists, while it is all unreal, false, impossible ”

“ I believe, there is much truth in what the writer states above and what is applicable to Ireland regarding the above picture, applies with still greater force to India. So far as my experiences prove, an effort must be made by the Government, as well as by the leaders of the people, to stop this sufficiently serious state of things. “ There is much talk of national rehabilitation,” as one happily puts it, “ but let those whose hearts are devoted to the cause have a care lest when it comes, Cockneys are not found seated in every Cabin throughout the land ”

The system of Co-operative village libraries was advocated in Ireland some ten years ago. The proposal was that there should be a library in every parish and the work to be done by the parish library should be of a comprehensive character. The advocate of these libraries suggested that the following line should be adopted by them

1 Books on technical subjects to be kept, ‘from which the people may learn something of the two great problems that concern us and the welfare of the nation most,—agricultural and industrial development

2. As the libraries will have to change an ‘unliterary people’

into a ' literary people ', instead of vapid books, good literature should be placed in their hands

3 An attempt should be made to revive and give a new impetus to the Irish language

Now, certainly the circumstances relating to Ireland " where every one is able to read " are not applicable to India, but I venture to think that to do away with the gloom of ignorance which pervades throughout this land of yore, it is all the more advisable that systematic attempts be made to start village libraries all over the country I am strongly in favour of carrying on the first experiments on the Co-operative Credit Societies—be they rural or urban—as the members of these societies have already some sort of training and it will be easier for them to grasp the objects of these libraries and to profit by them

I don't think we will require much money to start with say, for 2 or 3 Societies and even if it is required, I am sure money will not be wanting in Although a poor man, I am prepared to spend a few hundred rupees to enable us to see how far this idea can be carried on and I shall be only too glad to hear from the Registrars of Co-operative Credit Societies on this subject and Co-operate with them

The credit movement has come to stay with us, in spite of many ominous forebodings It has been working on smoothly, to the great delight of our Government which is mainly responsible for its growth and development and for which we, the people of India, are deeply grateful to it And over and above all, there is in the movement itself " something "—call it sacred, call it heavenly—or by any name by which you want to designate it,—something, which makes us acclaim with our talented poetess

" Nay, do not pine . though life be full of trouble,
Time will not pause or tarry on his way.
To-day that seems so long, so strange, so bitter,
Will soon be some forgotten yesterday."

Causes of the General Failure of Oil Pressing Industry

IN

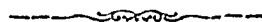
the Bombay Presidency

BY

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Last year while investigating on the prospects of oil pressing industries of India and the best means of developing them, I was asked by some merchants and friends to prepare a report bearing on this industry. On their initiative I undertook the work of drawing up a report showing the position of the industry and its possible developments. For this purpose I visited several Oil Factories in places outside Bombay like Baroda, Surat, Poona, and Bulsar to obtain information at first hand. I had also several interviews with oil Seeds and oil Merchants and my best thanks are due to the Indian Merchants Chamber of Commerce and Bureau of Bombay for arranging these interviews and also to Mr. Mathuradas Goculdas, late Manager of the Peeroo Mahomed Oil Mills Ltd. and the proprietor of the Thakar Soap Factory and Vital Mantle Factory and such other friends who have rendered to me valuable assistance.

Till recently the reputation of the oil pressing industry was at its worst, and failures were recorded everywhere. Companies after Companies were organised and several Oil Mills were started from time to time in Western India but with the solitary exception of the Peeroo Mahomed Oil Mills Ltd. which worked successfully for 25 years, all proved failures. To-day the capitalists and business men are not favourably disposed

towards this industry and are in many quarters extremely hostile to the idea of establishing Oil Mills in the Bombay Presidency

In 1902 Mr F. G. Sly, the Director of Agriculture, published a pamphlet (Bulletin No. 9 Dept. of Agriculture) on the Cotton Seed Oil Industry : since then the problem of oil industry has occupied a prominent position. Two more publications of importance have since been made by the Government of India. In 1907 the question was discussed at the Indian Industrial Conference and from 1908 several attempts have been made to organise this industry on a better scale. Two or three new companies were registered. At this time several articles were published in the Indian Trade Journal (Vol. VII) on cotton seed oil industry. These articles created further interest in the public and led to the formation of some more Companies. Unfortunately all of them proved abortive. Thanks to the efforts of Prof. T. K. Gajjar, the pioneer of Chemical industries in Western India, and Mr. Ralph C Whitneck, late Economic adviser to the Gaikwad of Baroda, Mr. Fredric Noel Paton, Director-General of Commercial Intelligence, and Dr. Harold H Mann public faith in the future of this industry was maintained in spite of the above failures. Prof. T. K. Gajjar in 1909 himself projected the Navnit Oil Manufacturing Company Ltd with a capital of Rs. 5,00,000. Part of the capital about Rs 150,000 was subscribed by the organisers and their friends, but the public had lost all hopes in the commercial possibility of the oil industry in India, and no more shares were applied for, although every attempt was made to start the work of this Company Finally the whole concern had to be wound up Prof. Gajjar had also organised The Alembic Chemical Works Ltd. which received a satisfactory response from the public whilst his Navnit Oil Manufacturing Company project had to be abandoned. My efforts were, at the outset of my investigations, directed towards finding out the causes of failure of this industry in Western India. As far as I could judge, out of the various causes that determined the fate of the in-

industry in its primary and experimental stage, the following may be given as the principal causes of failure.

I. At its very beginning, unfortunately, this industry received the attention of the adventurous class of men who had no special knowledge or experience of it. Without proper expert guidance or experience they framed schemes with the help of the Machinery agents, who knew next to nothing about the chemical and economic side of oil pressing industry and the consequences of whose ignorance had to be borne by the Oil Companies, and its pioneers.

II Acting under the advice purely of machinery agents the early Companies started with an uneven distribution of capital, paying perhaps too much for the machinery and leaving too little for Buildings, working Capital, employment of chemical experts &c. In two instances in Gujerat we find that the concerns were started with a nominal capital of Rs. 1,00,000 each, of which only Rs 60,000 were called. From this sum the machinery is reported to have cost as much as Rs 50,000 for a plant to crush 16 tons daily, leaving only a balance of about Rs. 10,000 for land, buildings, working capital, stores &c. Starting under such circumstances, however promising an industry may be, it is bound to fail.

III. As the natural consequence of the above, in seven cases of ten, the Mills had to be mortgaged from the very beginning, and if the originators and promoters did not possess sufficient influence they had no facilities even to borrow money to meet working expenses. Special stress must be laid on this point.

IV. Mr. P R Chaudhri of Calcutta in his paper on 'Oils and Oil Seeds,' read before the Third Indian Industrial Conference drew our attention to other features ; he remarks, " It was also then that I came to know of the deplorable *shortsighted policy* of these Millowners, the faulty economic basis on which some

of the Mills were managed and to some extent, the regrettable want of honesty." Dr. Lewkowitsch in his speech before the Indian Guild of science and Technology similarly remarks: "As another example, I might point to the industry of *Edible Cotton seed oil*. India, as you know, produces an enormous amount of cotton seed. The bulk of these is shipped to Europe to be worked up there into oil and cake. This industry should be retained in India and an important industry might be created, if it were taken up in India in the proper manner. In Bombay actually some Mills have been started, but look at the way in which this has been taken up by these apparently enterprising people in Bombay. They first thought of the edible cotton seed oil industry in the United States of America, and because the Americans were successful they thought that all they required to do was to send out a commission to look at the American Mills and to place an order for a large plant in America. Then the thing should work by itself. Unfortunately they overlooked the fact that the individuality of the Indian cotton seed ought to be studied; naturally failure was bound to come, as indeed it did come."

V. Some of the Oil Mills are equipped at random with Machinery suited to crush other varieties of seeds than their own particular requirement. I lastly visited a concern which though established for crushing cotton seed did not possess a single piece of machinery that is required for the special treatment of this seed while they had a regular plant for treatment of castor and other seeds. I have seen this instance even pointed out in a confidential Government report, on the subject. In some other cases I was surprised to find that Mills were equipped with old or rejected machinery brought from England or elsewhere. In the case of a Bombay Mill, which of course ultimately failed, I was told that the management had scarcely a day passed without some mishap or the other happening to the machinery.

VI There has been considerable ignorance as to the proper treatment of oil seeds and oils, and no small amount of difficulty was experienced in treating and refining the oils. At one of the Mills I visited, when they were crushing castor seeds, and did not, for some reason or another, get the proper colour and the peculiar florescence of the Crude oil, they tried to remedy this defect by putting in the Edge-runner a quantity of some harmless colouring material (turmeric) with the result that the merchants refused to buy both the oil and cakes worth about Rupees 20,000.

VII. During the monsoon and to some extent in other seasons, it is very difficult to store cakes, as they soon go mouldy and get heated up. Thus they get considerably deteriorated in value, where proper measures are not adopted for their preservation.

VIII. There is a very small local demand for cakes, and most of the cake is exported. This export business can only be paying if it is placed in the hands of reliable men, as we have to deal with a distant and unknown market.

IX. Rail and shipping charge of oil and cakes being very high some of the Mills located at long distances from the market or shipping port found it financially impossible to bring both the oil and the oil cakes to Bombay which is their chief market. In Broach, Baroda and other towns the faith of the people in the cakes and oil pressed in the native Ghanis make it difficult for the machine pressed cake and oil to find buyers locally.

X. Again in places like Broach, Baroda &c. seeds were not available in large quantities all the year round and they had to buy them from the Bombay Market. Thus they had to pay Rail charges both on the raw materials and on the oils and cakes, for ultimately the whole output had to be consigned to Bombay.

XI. As regards the exports of oils, there is considerable difference of opinion, but the majority of them are convinced as to the non-paying character of the export trade. Dr. Harold H. Mann and others inform me that the export trade in oils at present is not paying and any attempts to do so have met with failures. Five reasons for which are given.

I. High freight on oils.

II. High price of casks.

III. Loss by leakage.

IV. Loss by absorption.

V. Gross adulteration of exported oils by earlier shippers I am convinced that unless we can ship our oils in bulk as mineral oils there are very few chances of success in that direction.

As regards the loss by leakage and absorption I am informed by Messrs. Ransom and Company of London that if the casks are silicated or glued from inside these losses can be minimised. The English and continental buyers do not like to buy Indian oils on account of the gross adulterations that were practised by early shippers. It being easier to detect bad quality of seeds than an adulterated oil they prefer to buy seeds and not oils.

XII. The Indian farmer and cattle owners refuse to buy machine-made cakes for fodder as the percentage of oil in the country oil cakes is greater than in the Mill cakes. Though the percentage of oil in Mill cakes is less, it is erroneous to suppose that these cakes are poorer in quality as feeding stuffs. All the same it is very difficult to fight against this prejudice of the farmers and we have to face the situation as it is.

XIII. As the export trade in oil was, in the opinion of many, a non-paying business and as there was a very small demand for cakes it was found that the extension of the oil pressing industry was limited to the local demand for oils for

edible purposes and as lubricant. The Indian Bullock oil presses supplied the Edible oils and there was very little demand for the oils obtained by machinery. In fact the supply increased more than the demand and as there are no industries depending upon the utilization of oils, *e g*, soaps, candles, margarine &c the newly started oil Mills worked spasmodically and consequently were commercial failures.

XIV. Another serious cause of failure was found in the growing demand of mineral oils for burning purposes. Till the beginning of this century large quantities of vegetable oils were used for this purpose, but as these oils were dearer than the mineral oils their consumption was seriously checked.

XV On the one hand without proper knowledge and special experience the oil crushing industry was presenting inexplicable difficulties to the native Indian merchant, and on the other hand, shipping and financing facilities for the exportation of the raw material namely oil seeds themselves acted as a powerful inducement to our merchants and this brought about a further neglect of the otherwise important oil crushing industry. Special emphasis must here be laid on the detrimental effect produced by prolonged storage of seeds and cakes in this country. It was always found safe to send them out of India, as early as possible. Seeds stored in the warehouses of the Mills had considerably deteriorated and were found in many cases unfit for pressing purposes. Before concluding this short paper I must here mention the particular case of the cotton seed oil industry. In its very beginning it had lamentably failed as failure was bound to come. There was no technical guidance, no lucrative market for machine pressed oils and the products like hulls, cakes &c. Demand had to be created and in doing so reverses had to be encountered. Then character of the seeds had to be studied and the refining processes had to be perfected. This was only possible if the experiments had been financially supported. Messrs. Tata Sons and Company are to be specially congratulated on taking up this industry in the right and proper spirit and it is hoped that their experience

will work as a valuable asset for the future of this industry in India. The Indian Cotton Oil Mill Company Ltd of Navsari is also to be congratulated on having successfully terminated their experimental stage and on their desire and effort to place their Company on a sounder basis by increasing their original capital. Having taken into consideration the prominent causes of failures I am optimistic as regards the future of this industry and given technological skill, bonafide workers, facilities for commercial undertaking and organisation on right lines, there is no reason why this industry should fail, if the Government and the people continue in their efforts, as directed at present to develop, and promote this industry. I am sure we shall soon put a serious check on one of the greatest drains of raw materials from India and establish a staple industry which by right would belong to us in the future. New works for the manufacture of soap, stearine, glycerine and candle are started, and lubricants, boiled oils and other oils of technical importance are now made in large quantities in India, and there are now sufficient indications to show that we have passed through the experimental stage, and all the local conditions appear favourable for the founding of this industry on a large scale, and if we direct our future efforts wisely by our experiences of the past we shall have little cause to fear further failure

The Importance of Manual Instruction

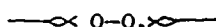
IN

Indian Schools.

BY

H. G. Bhabha Esq , M. A

Retired Inspector General of Education in Mysore



The hand of man contains the largest group of small muscles in the human body whose fine adjustments produce what is called skilled labour. Every muscle in the body contracts under stimulus of nerve force proceeding from the motor centres of the brain, and this outward or efferent current is either the result of a sensory or afferent current from the surface of the body to the sensory centres of the brain, or at other times of the will to move a particular limb or muscle in a definite way to accomplish a desired action or movement. The sensory and motor centres are knit closely together in the brain by nerve paths or connecting nerves. At the same time for all voluntary actions there is close connection between the centres of feeling and thought and motor centres which produce voluntary action. The motor centres connected with the hand form a large motor area in the brain, the largest connected with any group of muscles. The movements of the five fingers and the numerous small muscles and joints connected with them when they are used for skilled work all require fine co-ordinations and adjustments, which are produced by the minute regulation of nerve currents from the motor area.

The muscles of the body are divided into fundamental and accessory, the former being those of the trunk and large joints, neck, back, hips, shoulders, knees and elbows, which man has in common with the higher and larger animals. These large muscles are constantly used by hard-working but unskilled labourers who are men of little culture or intelligence. The accessory muscles

are those of the hand, tongue, face and articulatory organs. These are comparatively very small, but they can be grouped into an infinite variety of combinations producing finely adjusted actions like those of writing, talking and piano-playing. The motor area connected with them is very large and complex in the cortical layers of the brain, while that of the fundamental muscles is smaller and simpler in its physical organisation. The smaller muscles for the finer movements come into activity later in life, than the larger and coarser muscles and are most intimately connected with mental growth and vigour. "These smaller muscles might almost be called organs of thought. Their tension is modified with the faintest change of soul, such as is seen in accent, inflection, facial impressions, hand-writing and many forms of so-called mind-reading." The larger muscles are exercised earlier by all kinds of hard and rough labour, by gymnastics and sports. "The day-labourer of low intelligence with a practical vocabulary of not over five hundred words, who can hardly move each of his fingers without moving others or all of them, who cannot move his brows or corrugate his forehead at will, and whose inflection is very monotonous, illustrates a condition of arrest or a trophy of this later, finer, accessory system of muscles."

Stanley Hall in his 'Adolescence' says that "muscles are by weight about forty-three per cent of the average adult male human body. They expend a large fraction of all the Kinetic energy of the adult body, which a recent estimate places as high as one-fifth. The cortical centres for the voluntary muscles extend over most of the lateral psychic zones of the brain, so that their culture is brain building. In a sense they are organs of digestion, for which function they play a very important role. Muscles are in a most intimate and peculiar sense the organs of the will. If they are undeveloped or grow relaxed and flabby, the dreadful chasm between good intentions and their execution is liable to appear and widen. Character might be in a sense defined as a plexus of motor habits." Some men see clearly the consequences of action or want of action, and have a clear judgment and the best of intentions, and yet fail to take the right action at the right moment from want of will power or quick decision. The severance of action from intention is perhaps the most humiliating

feature in the character of some men. The exercise and development of muscles are thus necessary for the development of character and will power.

Such exercise and development are absolutely necessary for the growth of the brain during the period of adolescence. The brain and the muscles react on each other. While muscles grow in size and strength by exercise, the motor centres of the brain connected with them as well as the higher intellectual centres of thought and will grow larger and stronger. The brain cannot be developed fully unless the muscles employed in voluntary actions are systematically exercised.

This development of the brain and character is not dependent so much on the size and weight of the brain or the size of muscles as upon the functional activity of the brain cells called forth by the exercise of the muscles and the complexity of their co-ordinations in activities for a purpose. The exercise of motor cells must to be effective take place during the period of growth. Hence it is from the age of about four to the age of about fourteen to sixteen that the brain centres connected with the small muscles and joints of the hand and fingers are developed. Thus it becomes necessary to impart manual instruction not only in Elementary Schools but also in High Schools. The muscular activities of the hand can attain a degree of efficiency in this period which is not possible at a later age. Dr. Nicholas Murray Butler defines manual training as "Mental training through the hand and eye," and this definition is the guiding principle of all manual training in the best American Schools.

"The philosophy, if such it may be called," says Stanley Hall, "that underlies the movement (in favour of manual instructions) is simple forcible and sound, and not unlike Pestalozzi's 'no knowledge without skill,' in that it lessens the interval between thinking and doing, helps to give control, dexterity and skill, an industrial trend to taste, interests many not successful in ordinary school, tends to the better appreciation of good honest work, imparts new zest for some studies, adds somewhat to the average length of the school period, gives a sense of capacity and effectiveness, and is a useful preparation for a number of vocations."

"These claims are all well founded, and this work is a valuable addition to the pedagogic agencies of any country or state. As man excels the higher anthropoids almost as much in hand power as in mind, and since the manual areas of the brain are wide near the psychic zones, and the cortical centres are thus directly developed, the hand is a potent instrument in opening the intellect as well as in training sense and will."

The smaller muscles of the hand can be brought into full vigorous and finely adjusted action only by manual training at the right age during the period of growth. From the age of four to about the age of eight the best training for the hands is given by drawing, clay modelling, and Froebelian occupations, such as brush work, stick laying, bead work, brick building, paper cutting, paper folding, elementary school gardening, etc. These occupations should be followed by cardboard work, ornamental leather work and other similar occupations and gardening to the age of 11, when with the increased muscular growth and vigour of the child wood sloyd may be commenced. Wood sloyd should be followed at the age of 14 or 15 by metal work such as filing, drilling, chipping, soldering, forgework and lathework. Machine fitting and building forms the last stage of mental work in American schools. Students of a Manual Training High School of America who have completed their course leave behind as a rule a complete machine built by themselves as a proof and memento of their skill.

While the above subjects of Manual training are fitted for town schools, other occupations for the Indian village schools may be suggested for children under eleven years of age, such as pottery, basket making, rope making, mat making, and the making of boxes, trays and cups of grasses, rushes, fibres and leaves. Cheap and useful articles may be made of cocoanut fibre and shells. Cloths and rugs may be woven on looms roughly prepared from cheap materials by the children. Wool may be spun and rough country blankets may be woven. Gardening would provide easy, useful and instructive manual work. Sewing, knitting and cooking can be taught in girls' schools at no great cost if the materials are supplied by the parents. Models of various kinds of shelter such as huts, dwelling houses, cowsheds, etc., of the primitive type may be made by children with the use of the

simplest tools like the pocket knife and a small hammer and saw. For older children practical agriculture and sericulture are the most useful industries, every village school being provided not only with a school garden but a small farm, on a part of which mulberry or castor oil plants may be grown for the feeding of the ordinary or eri silkworm

For schools in towns where commerce and industry flourish, the great want for boys in the lower secondary and high stages at present is of schools like the Manual Training High Schools of America which combine literary, mathematical and scientific education with practical education in drawing, wood work, metal work and mechanical engineering. It has been found by experience in America that far from such a combination of subjects retarding the progress of students intending to proceed to colleges, it helps progress in the old literary course and turns out and more-up-to-date all round men, physically, mentally, morally superior to the young men educated in the old classical schools. In these schools while the literary and scientific course occupies from 10 to 15 hours a week, the practical teaching or mechanic arts as they are called in some schools occupy from 12 to over 20 hours a week. Similar schools are maintained by the Paris Municipality in which general education of the secondary type is imparted in the mornings from 9 to 12-30, and high practical education in drawing and design, mechanical engineering, or all the departments of printing is imparted from 1 or 1-30 to 6 for five days in the week

For rural districts in India in which agriculture and farming flourish the best kind of secondary schools are institutions like the Hampton and Tuskegee Institutes, in which ample provision is made both for general education and industrial education in all such branches including agriculture and farming as are most useful to the public, to enable every negro youth to acquire the means of honourably earning a decent livelihood. These institutes have revolutionised the social and economic condition of all negroes in South America, who now form a contented prosperous and successful community, and can compete successfully with the white races even in the learned professions of doctor, engineer, lawyer, and clergyman. Such institutes will no doubt cost heavy sums of

money to equip, but a beginning should be made by Government until India becomes a rich country and its wealthy people learn to part with their wealth for the education and prosperity of their less fortunate countrymen.

India is at present at the commencement of a great industrial awakening. Its progress and future prosperity will depend upon the educational policy now adopted by wise administrators. The success of Hampton and Tuskegee as educational institutions which have raised the character of the coloured race and rendered thousands of the race self-respecting, prosperous and useful citizens is full of practical lessons for educationists in India. Education for the common people in India before the advent of the English was confined to reading, writing and arithmetic, the higher classes receiving purely Sanskrit education of the type given in pathshalas. After the formation of the Education Department in India under British rule to the present day, education has been almost purely literary from the primary school upwards to the college. Sufficient attention has not been paid to technical and scientific education, manual and industrial instruction in schools of general education has not even been commenced, and the methods of instruction adopted have been such that habits of observation, reasoning and research have not been cultivated. The same mistake has been made in India from the oldest times in making public education almost wholly literary as was made by the New England missionaries when they first went to South to educate the negro. To add to the disastrous effects of a false ideal of education, the prejudice of the Virginian planters against the education not only of the coloured children but also of the poor whites, based on the old feudal system of society, which assigned duties but gave few privileges to the different classes in the social scale, has been repeated in India. The cry has often been heard in India, though it is less frequently heard now than it was heard some years ago, that the people should pay for their own education, and that it is not the duty of the State to educate the people. What the Government spends comes from the pockets of the people, and if the people are unable to pay more, or to tax themselves specially to provide for their education, or to appreciate a more beneficial system of education than the present even if they have the means

to pay for it, then no efforts need be made to retrench expenditure in other directions to provide for an increase in the cost of the people's education. In America, on the other hand, it is the deepest and most cherished conviction of the people and the State that the trained intelligence of the people is the highest asset of the State, that all moneys private and public spent on education are the best investment, that natural ability, wherever it may be found, irrespective of race or social class, should be cultivated and developed to the highest possible extent. The vast natural resources of the country and the wealth of the people enable the Americans to spend fabulous sums on educational institutions. But the development of the natural resources of the country and the wide dissemination of a highly useful and productive education have reacted as they must on each other as cause and effect in America. The conditions of India, however, are widely different from those of a rich progressive country like America. India is essentially a poor country dependent chiefly upon agriculture, 66 per cent of the population being agriculturists. In such a country advance in the spread of education of all kinds must be necessarily slow. And when the funds are insufficient for encouragement of all grades of education, necessarily higher education has to be made self-supporting as far as possible, the savings being devoted to primary education. Much nevertheless can be done in India by adopting a better ideal of education for the people, by combining manual and industrial instruction with the general education of the masses, or in other words by giving a practical combined with literary education, to enable the people to attain to greater competence and a higher standard of living, and also by adopting more correct methods of education from the infant class upwards in all schools.

The education of the masses has to be made as practical and productive as possible, while at the same time it should be such as will improve, strengthen and elevate their character. For such education there is no better model than that adopted in the Hampton and Tuskegee Institutes. Agriculture should be practically taught by trained teachers from the village schools upwards in all primary and secondary schools according to a graduated scale of instruction. School gardens should be established in connection

with all schools and nature-study encouraged. Manual training should be commenced from the lowest classes, and industrial education combined with the usual school subjects in all primary and secondary schools. What industries should be taught must depend upon the local conditions and what the people want to have done for themselves. It is quite practicable, nay it is imperative, to combine five periods of theoretical instruction say of 45 minutes each with practical work for about three hours every day. Such a combination would make the children more alert, more fond of studies as well as hand labour, more healthy and more likely to achieve success in life, than if their education was confined to only one kind of instruction. The establishment of Normal and Agricultural Institutes like that of Hampton and Tuskegee, at first one for each province or group of districts, and later one for each district, would be the salvation of the people of India. In productive efficiency, in wealth in self-respect, and character, in the hatred of shallow politics such as the idle, ignorant and thoughtless indulgence in, the people would make rapid advance and thereby increase their own happiness. A contented and useful middle class would then be created such as now hardly exists in India.

The Place of the Domestic Industry in Indian Economic Life.

BY

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Section I.

The economic transformation of the village . The gradual extinction of the Cottage industry.

India is now in the throes of a great economic revolution

India is in a state of economic revolution as shown by a contrast between city India and rural India

A contrast between city life and village life would show the fundamental character of this revolution. Rural India is old ; city India is new. Rural India carries on the production distribution and consumption of wealth in a manner which is strikingly different from that of city India The structure of rural society has hitherto rested and is still resting to a certain extent on status, while the cities are rapidly coming under the sway of competition Indeed the economic ideas of the city are not only far removed but in some cases are actually antagonistic to those of the village The village is still almost self-sufficing, and it itself an economic unit The village agriculturist grows all the food necessary for the inhabitants of the village. The smith makes the plough-shares for the cultivator and the few iron utensils required for the household. He supplies these to the people but does not get money in return He is recompensed by mutual services from his fellow villagers The potter supplies him with pots, the weaver with cloth and the oilman with oil From the cultivator he receives the traditional share of grain. Thus almost all the economic transaction are carried on without the use of money To the villagers money is only a store of value, not a medium of exchange. When they happen to be rich in money, they hoard it either in coins or make ornaments made of gold and silver. The village agriculturist possesses little capital. He lives from hand to mouth The Banya supplies the cultivator with seeds and charges an enormous interest

But the cultivator pays the interest ungrudgingly, though he stoops under the heavy burden he does not improve his position. There is no desire for a better, more comfortable living, both among the cultivators as well as among the artisans. The artisans follow their hereditary occupations. There is no competition, no stimulus for improvement, no change in customary wages. The industries are stereotyped, the apprentice only tries to imitate his master and rarely thinks of introducing new implements or new methods of manufacture. Thus "the village communities are the most complete and the most contented in the world. Within their self-sufficing confines trade is no vulgar source of profit for which men scheme and strive, but a calling, often a holy calling, handed down from father to son through generations, each with its own unchanging ideals, its zealously-guarded craft."

But the village life is being transformed. The city sends to the village Manchester cloths and these are replacing the cloths woven by its weavers. Not only weavers but also other artisans are losing their occupations and turning to agriculture. The cheap kerosine oil from Baku or New York threatens the oilman's existence. Brass and copper which have been used for vessels from time immemorial are threatened by cheap enamelled iron-ware imported from Europe. The village sugar-cane is also in danger on account of the competition of imported sugar which is sold at very low price. The manufacture of sugar from *gur* tends to become unremunerative. The demand for *gur* also falls off when the price of sugar is brought down by competition. There is also *pari passu* a transformation of the taste of the consumers. They abandon *gur* for crystal sugar. Home-woven cloths are now replaced by manufactured cloths for being too coarse. All local industries are attacked and many have been destroyed. Villages that for centuries followed customary practices are brought into contact with the world's market all on a sudden. For steamship and railways which have established the connection have been built in so short an interval as hardly to allow breathing time to the village which slumbered so long in the regime of custom. Thus the sudden introduction of competition into an economic unit which had from time immemorial followed custom has wrought a mighty change.

And by the gradual transformation of Rural India

New economic ideas have now begun to influence the minds of the villagers. In some of the villagers the weavers and the blacksmiths have no doubt been compelled to leave their occupations on account of foreign competition but more men are leaving their hereditary occupations of their own accord. All Brahmins are not priests now. Many indeed live according to the old ideas and view the temptations and vices of the west in "silent deep disdain". But a few of them who have felt the impulse of a new life have gone to the cities. Those who are intelligent become lawyers or government servants, and those who fail in the competition become petty clerks in Railway or mercantile offices. The middle classes also leave their village and get scattered all over the country to earn a living. A writer thus laments the decline of villages in Bengal "In days long gone by our villages vied with each other as to which had the best Sanskrit Pandits and the best Tols. which had the largest number of Durga-pujas and where the largest number of people of all castes were fed. The days are gone by when each village was proud of the products of its looms, of the hoes made by its blacksmiths, its Jatras, and its Baruan poojahs. But where are these things now? Echo answers where? At day time you will find large and expensive buildings either wholly unoccupied or in the occupation of a few old women. Is there a pestilence in the villages? Ah! not for you will see the houses and huts of the peasantry full to overcrowding. It is the houses of the middle class *bhadralokes* that are wholly or partly unoccupied and that gives to the whole village the look of a deserted village." Not only the middle classes but the field labourers also have found their ancestral occupations not sufficiently paying and have felt the need of moving to other places. The Government public works, the factories, the tea, indigo and coffee plantations, the mining operations as well as the facilities for foreign emigration all tend to shake the old immobility of labour. As the Imperial Gazetteer writes: "A comparison of census returns of 1891 and 1911 shows that a considerable landless class is developing which involves economic danger, because, the increase has been most marked in districts where the rural population is already congested or in provinces in which there is a special liability to periodic famines. The ordinary agricultural labourers are employed on the land only during the busy seasons of the year and in lack times a few are attracted to large trade-centres for temporary work."

The attraction to towns and other trade centres increases as trade industries develop and this movement is accelerated in famine years. "Agricultural labourers migrate from Bengal and the Central Provinces to Assam, from the United Provinces to Bengal from Madras and Chittagong to Burma, and outside of India to Ceylon, Mauritius, South Africa, British Guiana and other colonies in search of Agricultural and other employment. In Madras where emigration has been comparatively easy there is almost a chronic scarcity of labour. In a memorial of some landowners of the district Tanjore to the Madras Government, it is said that the agricultural operations have been much impeded and at times endangered by the constant and sudden desertion of agricultural labourers, who after entering into contract to cultivate the lands on certain condition emigrate to foreign parts without the slightest notice to their employers. They pray that facilities for emigration of agricultural labourers to foreign places might be restricted."

There are also other great far-reaching effects of this migration of labour. Formerly the landless labourers were solely at the mercy of the landlords who employed them at starvation wages. In the slack months they had to starve. The demand for labour has changed all this. The gumustas and other employers of labour have now to treat the labourers mildly and give them good wages. Agriculture has now improved, when it has been relieved of the excess of labour. On the other hand there has been engendered an aversion for the parent plough and workshop. The demand for labour again, has withdrawn the most valuable and potential elements from the society—the flower of the agricultural population and rural artisans—so that not only agriculture but the handicrafts also suffer. The production of cereals has diminished a great deal while the foreign exports have a continuous tendency to rise. The village market is no longer isolated, the demand for food in any part of India tends also to affect it. The population has increased and the standard of living has also become higher. The cooly emigrants or the middle classes who return to the villages bring with them good savings and live on better

fare than they were content with before they emigrated. The increased demand for food is however unaccompanied by increased out-turn of agricultural products. The price of food stuffs has consequently risen by 32 p c. The exodus to towns is still going on at an alarming rate, the towns still continue to offer easy employment to the middle classes and labourers and ready markets for the products of the village artisans. They offer high material prospects to the ambitious and in general provide for all the mechanical facilities and pleasures of life to satisfy those whose standard of life has suddenly been raised. The landlords pass their lives amid the luxuries of the towns, and lose touch with their tenants. The sturdy cultivators become domestic servants and the middle class independent *bhadralokes* become clerks in mercantile offices and government establishments. Thus the villages are all deserted and left as wastes and become prey to malaria. Paternal estates, tanks and orchards which have been handed down from generation to generation are left to decay. The cattle gradually deteriorate in quality. Milk and dairy produce become gradually scarce, and pisciculture and horticulture become unknown. The movement of the population from the village to towns is in fact not only working a complete revolution in the habits and ideals of our people but its economic consequences are far more serious than are ordinarily supposed. It has made our middle class helplessly subservient to employment and service and has also killed the independence of our peasant-proprietor. It has jeopardised our food supply, and is fraught with the gravest peril not only to our handicrafts but also to our national industry, agriculture as well.

The exodus to towns, however, is unhappily the most outstanding feature of our recent industrial life. It is facilitated by railways which afford easy opportunities to travel unknown before. The railways have affected the village economy in another way. By bringing foreign goods they have introduced competition in sequestered villages that for centuries followed custom and paid customary prices.

A money economy further helps the process of economic transformation. The Kabuhs and other middle men that deal with imported goods are not local people and will not wait for a quantity of grain at harvest time. The men who went to the

(c) The introduction of money-economy

cities and other trade centres were paid in money and not in kind for their labour. When they return to the villages they come with ready money in their hands. Again, the steady rise in prices of the necessities of life which has been a characteristic feature of the recent economic history of the country has made the cultivating classes more or less independent of the *mahajans* by putting them in possession of an amount of ready money which they never possessed before.¹ Still these are not the sole reasons for which a money system should come into universal use. The system of collecting the revenue in cash is the most powerful cause of the introduction of money economy.

Thus there have in operation several forces which tend to profoundly affect the old Indian rural economy. But the question that presents itself in this connection is, *How far will the influence of the new economic ideas and practices of the West modify this old Indian economic system?*

There are now many facts to show that the process of transformation is not at all accomplished. These facts we can gather from a study of Indian life and labour, specially in the village. Each village has still its potters, carpenters, blacksmiths and weavers who are meeting the village demand together with the manufactures of the west. In spite of the attraction to towns, the people as a mass live in villages. Of India more than any other country it can be said that the nation lives in the cottage. 90 p c of the total population of India live in villages whereas in England 75 p c of the population live in towns. There are only 2,150 towns in the whole of India possessing not less than 5,000 persons. Even these towns are aggregations of villages, not greatly differing from single villages. There are 190 towns in Bengal which contain only 5 per cent of population. The villages make up the remaining 95. The number of villages in Bengal is about 203,658 counting each so-called towns as only an overgrown village. Of these 165,305 contain under 2,000 souls, and 3,066 over 3,000. Migration or emigration has worked hitherto on such a small scale in India as a whole

Still the self sufficiency of the Village yet remains, and migration and emigration work on a very small scale. Thus the Village is still the real economic unit of India.

1. Burdwan District Gazetteer, p 112.

that little relief has been given either to congested or to sparsely populated districts. The Indian peasant clings to the neighbourhood of his own home however much it may be overcrowded. Again, "the movement between different parts of India is usually of a temporary nature, and does not involve a permanent change in residence" Statistics show that over 90 per cent of the inhabitants of every district were born in that district 6 per cent were born in the districts immediately adjoining it and only 3 per cent come from more distant places. Thus the self-sufficing isolated village is still the real unit of the Indian social life.

The number of landless labourers who are employed in mills and factories is exceedingly small as compared with the total industrial population ¹ of our country.

In the Punjab where a great deal of land has been brought under canal irrigation within recent years and has been colonised by people from thickly inhabited tracts, the census returns show only 360,000 labourers and more than 10,000,000 landowners and tenants. Large industries have been established, but the supply of labour has been found to be inadequate. "The tea gardens of Assam are worked, though less and less so as time goes on, by coolies recruited under a system of state-aided and state-supervised emigration under the Inland emigration Acts. The stream of emigrant coolies that used to be poured out to the British colonies under a system of state-aided emigration is now almost counterbalanced by the coolies who return to India." ² "The factories are suffering from the inadequacy in the supply of labour. The deficiency has seriously restricted their productive capacity

1. As H. H. the Gaekwar said. "Very much the large proportion of the Industrial population of India is engaged in indigenous industries carried on in village homes and bazaars. *India is and will always remain a country of cottage industries*, where hundreds or thousands can work in factories millions or tens of millions work in their huts. Any comprehensive plan of improving the condition of our industrial classes must, therefore, seek to help the *dwellers in cottages*. It is the humble weavers in towns and villages, the poorer braziers and copper-smiths working in their sheds, the resourceless potters and iron-smiths and carpenters, who follow their ancestral vocations in their ancestral homes, who form the main portion of the industrial population, and who demand our sympathy and help. It is they more than the agriculturists or the mill and factory labourers that are most impoverished in these days and are the first victims to famines. (Inaugural address in the Industrial Conference, 1906.)

2. Economic aspects of British Rule in India.

The deficiency has seriously restricted their productive capacity ¹ The fact is that the Indian labourer is quite reluctant to leave his village. When however he does leave his village to work in the factories, he does not leave it for good, but he tries to return as soon as he can. As the report of factory commission 1908, says, "The Indian factory hand is primarily an agriculturist. His real home is in his native village not in the city where he works. He leaves both wife and children behind him when he emigrates to the factory and regularly returns to them to look after his family affairs and to rest from his labours. More than this, he can always find work in his village if he gets tired of the factory."

Thus the structure of rural society is being transformed, but the transformation though rapid has been as a whole very small. Indeed the new ideas that have come from the west are so thoroughly alien to the habits and ideals of our people that these cannot be adopted without any danger to our rural institutions. The Indian village will not live if these disruptive ideas begin to influence our social life. But it is impossible that the Indian village can be destroyed. The east is not unchanging. The Indian village had changed with the change in the time. The new conditions which have been introduced in India will inevitably lead to a change but it is hoped that India will remain changeless in that beneath the thin garments of Western influence she will remain true to her own spirit. The change had already begun, the last decade in India has witnessed mighty changes brought about

1 "There is at present one very serious obstacle to the rapid development of the factory system. Labour is very difficult to secure. The Indian labourer does not readily adapt himself to new methods. In factories, in handloom workshops and in coal mines there is the same complaint,—that the wages are higher than can be earned anywhere else and yet there is a strange unwillingness to be tempted by them. In order to induce an Indian workman to enter a factory, he has to be allowed a freedom from discipline which will soften the contrast with his older methods of work. (Prof. Lees Smith, India and the Tariff Problem -24) Again,

"At the Raniganj coal mine the labourers will not as a rule work more than half the month. Though they could easily cut two tubs a day they are usually content with cutting one and they take frequent holidays." (Report of the Chief Inspector of Mines, 1905.)

by her contact with the West As Mr A Chatterton has said: "The methods of Western Industrialism are steadily introduced into the old rural organisation of India but they have not yet taken root, the undivided family has to be reckoned with, and the extreme sub-division of property renders productive effort on a large scale difficult, comfort rather than luxury, a moderate rather than vast fortune —these are the ideals of enlightened Indians. In consonance with her character and socio-economic traditions of life and art, the product of centuries of her past evolution, India has not yet accepted the methods of the West nor she will do so willingly Indeed, it is probable that, in the interest of her self and the world India would strive to move forward to a goal more in harmony with her own traditions than is that presented by western civilisation

She would pursue a *via media*, and neither adopting wholesale commercialism by replacing her artisan by the machine as is done in Europe, nor leaving the artisan severely alone to his sure and ultimate discomfiture She would evolve a system on her own lines the object of which should be to employ human labour to the greatest extent and the way most advantageous to the individual man, which would maintain as well as develop her own ideals of life and art, the product of her past economic history. The steps of this gradual evolution have yet to see The modern phase of transformation is transitional and bound to be temporary because it is characterised by a total severance from the time-honoured indigenous ideals of life and art

1 "There is no doubt that the immemorial civilisation of the Hindus will undergo change both in its spirit and in its practice under the stimulus of the potent foreign influence to which it is now exposed Yet I cannot help hoping that the Indian people physically and mentally disqualified for the strenuous (Materialistic) life of the western world will retain long in their nature enough of the spirit of Sadhuism to hold steadfastly to the simple, frugal, unconventional life of their forefathers for which climatic conditions and their own past history has so well-fitted them, always bearing in mind the lesson taught by their sages that real wealth and true freedom depend not much upon the possession of money or a great store of goods, as upon the reasonable regulation and limitation of the desires " (J C. Oman *The mystics, Ascetics and Saints of India*)

SECTION II.

Claims of the Cottage Industry, General Considerations, the Ideal of Production.

It has often been remarked that the economic unit in India cannot develop into that complexity which characterises the economic life of the West. Sir Theodore Morison has observed that the Indian economic organisation is one in which it is not possible that the division of labour could be especially in non-agricultural pursuits carried very far. "Owing to the necessities of agriculture, the people are scattered over the face of the country in small villages. These villages constitute self-sufficing industrial units. As the division of labour is limited by the possibilities of exchange, there is no opening in such villages for specialised skill. This is true, however, only to a certain extent. For if one village has a group of artisans who are very fine workmen, their wares may command a large market out-stripping the limits of the locality. Thus every village in our country has its blacksmiths and coppersmiths and also its jewellers, who carry on their business on a small scale but in some villages these local industries have attained considerable magnitude, such as the manufacture of copper and brass vessels at Srinagore, Benares, Mirzapore, Lucknow, Moradabad, Jaipur, Poona, Nasik, Bijapur, Madura, Vellore, Mysore, Rangoon. Similarly the silversmiths and jewellers of Srinagore, Multan, Lucknow, Jaipur, Cutch, Ahmedabad, Poona, Bangalore, Madras, Cuttack, Calcutta, Rangoon, and Moulmein are famed all over India. (The Imp Gaz Vol. III, p. 234) Specialised skill, therefore if it is highly efficient finds for itself a ready market outside the limits of the locality. Indeed the market which our domestic industries commanded in the past was not confined to this country but extended beyond its frontiers far into the West.

India had never been a land only of raw produce. From the very earliest times she enjoyed an industrial supremacy sending the products of her domestic industries to the West and receiving in exchange the precious metals which went to constitute her proverbial wealth. For centuries, indeed, had she been able to maintain her proud position as the Queen of the Orient, commanding the markets of the world through sheer superiority of workmanship of her craftsmen. But the repressive commercial policy of the E I Company in the

18th and early 19th century coupled with the invention of steam power has produced a vast transformation. All our domestic industries have been threatened with imminent extinction. The rush of the steam-engine and the whiz of electricity, combined with cheap and easy means of transport have well-nigh succeeded in making our country a dumping ground for the manufactures of all nations.

We have to oppose this overwhelming flood of manufactured goods for our very existence. But how shall we compete with the West? Shall India adopt wholesale the method of Western industrialism? Would we adopt wholesale the methods of industrialism of the West which have been accompanied by so much social and economic evils?

In fact the methods of manufacture as they are at present in the West will not suit our socio-economic condition. In the mad struggle for competition let us not forget that India is still and her material production must be controlled by the spirit of her real-self. 'The true end of material civilisation is not production but use, not labour but leisure, -not to destroy but to make possible culture. A nation which sees its goal rather in the production of *things* than in the lives of *men* must in the end deservedly perish' "1 "Already all over the Western world the problem which with ever increasing urgency demands a solution, if peace and progress are to be preserved is that of the persistence of undeserved poverty in the midst of abundant wealth, of unemployment in the midst of unsatisfied desires "2 Again, "Never before in our history was the misery of the very poor more intense, or the conditions of their daily life more hopeless and degraded, the vast wealth which modern progress has created, has run into pockets, individuals and classes have grown rich beyond the reach of advance, but the great majority of the toilers and spinners have derived no proportionate advantage from the prosperity which they have helped to create "3

1 Dr A K Coomarswamy's essays in National Idealism, p 155.

2 Max Hirsch Democracy vs Socialism, Introduction

3 Mr Joseph Chamberlain

According to a recent estimate 125,000 families of the wealthy class in the United States and hold 33,000,000,000 dollars of the total wealth of the nation, while 5,500,000 of the poorer classes possess only 800,000,000 dollars. To put it in another way in every hundred families of the nation family holds more than the remaining 99. Nearly half the families of the nation are classed as "propertyless," i.e. having nothing save clothing and household furniture. (Spahr essay on the present distribution of wealth in the United States.) This inequitable distribution of wealth, of material well-being, this practical exclusion of the masses from the greater part of the benefits and enjoyments of modern civilisation is creating everywhere the most dangerous discontent among the labouring classes and is awakening among the philanthropists and statesmen the greatest solicitude and apprehension.

Prof Giddings of the Columbia University has thus pointed out the serious dangers, of what he characterises as the "startling contrasts of civilisation". The enormous disparity of wealth in which a highly organised industry has resulted is clearly revealed to every eye. Into this dangerous combination of conditions, enters the demoralising factor of personal degeneration. Many of

In some countries in Europe real well-being has been sacrificed in the interest of concentrated production. A highly organised industry has resulted in an enormous disparity of wealth that has created unrest and caused grave social evils.

the rich, though happily not a majority, surrender themselves to the mad struggle to get money that they know not how to use, to achieve notoriety even though it may be scandalous, to accomplish anything

if only it surpasses everything that has hitherto been imagined. Consumed with a sense of their own importance, the degenerates of this class become more and more exclusive. Living at the centre of the throbbing life of humanity they affect to ignore its passions, its sorrows, its joys. They seek to cut themselves off from all part in a work-a-day-world. On the other hand, many of the poor, though happily not a majority, give ear to anarchism, withdraw themselves as far as possible from contact with the rich and cherish the hope of organising the proletariat into an irresistible force and taking possession of all the organs of Government. Thus, he concludes, "civilisation is menaced by dangers perhaps as grave as those that overshadowed it at the beginning. It was threatened then by the barbarism beyond its walls. To-day it is threatened by the *savagery within its gates*"

The over-crowded filthy cities, the depopulation of rural districts, the enormous disparity of wealth and the consequent conflicts of labour and capital and chronic social interest, the inevitable evils of the factory system have, in fact threatened the very foundation of the western society. The people in the West have begun to think seriously what the Chinaman said to them. 'Your people are no doubt better equipped than ours with some of the less important goods of life; they eat more, they drink more, but there their superiority ends. They are less cheerful, less law-abiding, their occupations are more unhealthy both for body and mind, they are crowded into factories divorced from Nature and ownership of the soil.' Everywhere indeed an increasing desire to once more relate the life of the people to the land is clearly manifest and the domestic system of industry is being revived and re-established.

The cry of Socialism

A recent German economist has thus spoken of the new age of idealism that is coming in modern Europe.

"Mankind up-to now has not known how to put the riches it has gained to the best possible use. But he who has eyes to see and ears to hear can feel the new age approaching, with newer ideals that fall like sun's rays on the heart of the present generation. We are tired of the material prosperity, which our fathers made for us, and of which they were so proud. We want something else. We want a different kind of culture, in the next age. Idealism will take the place of Materialism and mankind will be healthier in body and soul."

In the face of all these, let us not introduce the system of labour in the factories without introducing fundamental modifications into it. Let India adopt the factory industry not in the lines of the west but adapt it to her own ideals and socio-economic conditions. We cannot dispense with factory production, for under certain conditions of supply and demand it is economically inevitable.

Let India modify the factory industry as she introduces it into her social system

A large proportion of the commodities required for our consumption will doubtless be made in the factory. Wherever there is a steady demand for the same class of goods, where fashion does not fluctuate or the individual taste of the consumer is not potent,

machinery will inevitably supersede hand-labour. In the production of commodities of precisely the same shape, size, colour and material which are not durable and in which therefore artistic developments are altogether superfluous machinery will always excel because of its obvious advantage in the increased output of

Conditions where the Factory System is Inevitable

motive force it can apply to industry, as well as the greater precision in the application than in the case of handpower. It is easily seen that the satisfaction of the primary animal wants,—hunger, thirst, cold &c are common to all, in these purely physical demands there is less qualitative difference in different men as the needs are the same, the consumption will be the absence of wide individual differences of taste, indeed, marks out the commodities for routine or machine-production. As individuals are nearest alike in their prime physical needs so, as they gradually develop higher material wants, and after these are satisfied, æsthetic, intellectual, moral wants,

When commodities of the same pattern are produced to meet a large and continuous demand e. g. industries engaged in satisfying the physical and routine needs of men (Hobson)

then individualism becomes more and more marked. It is therefore in the most highly developed or, as they are sometimes called the more 'artificial' wants of men, that the diversity of individual nature shows itself most

strongly, and demands a satisfaction peculiar to itself which only art can give. In a highly evolved society it is likely that many physical needs, and even some intellectual needs, will be common to all and will engage like individual attention. They may be regarded as routine-wants and will be satisfied by machine-made goods. Indeed it seems reasonable to expect that on the whole machinery will retain and even strengthen and expand its hold of those industries engaged in supplying the primitive needs of man, his food, clothing, shelter and other animal comforts. Again, industries in which a disproportionately large amount of durable plant is necessary, cannot be run profitably except on large scale. Thus in many branches of the metal and transport trades no business can be started except with a large capital. The railways and water companies, those that own canals, docks and bridges are always large businesses and tend to be concentrated in fewer hands. (Masshall's Principles of Economics, p. 693.)

The small scale business under these economic conditions results in a waste of efficiency, labour and skill which should

always be deprecated. Indeed in the interests of efficient production which alone can give the leisure as well as satisfy the conditions of healthy and complete living, production on a large scale under certain economic conditions is equally necessary with that on a small scale. But it should always be remembered at the same time that economic efficiency is not the end of civilisation. It is only a proximate end and therefore works within the

The Economic world only
a means

limits of and in subordination to the governing end, which is complete and healthy living, culture in the highest sense

of the term. As Professor Henry Jones has remarked, "the industrial world presupposes, exists within

It works within the limits
of larger ends, Culture and
Noble Life

and in virtue of, a wider social order

whose interests are as multifarious as the

desires of man, and which is indefinitely richer in ethical content

At its best it *is only a means and instrument* and can supply man with only the raw material of his real life. Its value does not lie in itself, but is relative to its use, and depends upon the kind of satisfaction which is sought by means of it." For, after all,

the purely economic world is an abstraction and the purely economic man is a fiction. After a man gets his living he has got to live. thus industrialism does not comprehend the whole

of life. Wealth is not adequate to the perfecting of culture: culture, as a recent writer puts it, is the appreciation, not contemplative alone but active and efficient, of the non-economic values. And if the measure of a nation's true success is its culture and higher life, the amount it has contributed to the truth,

the moral energy and intellectual happiness, the spiritual hope and consolation of mankind (Lowell) the West cannot face this just criterion boldly. Wealth has no doubt increased astoundingly, but

has culture increased? It is significant that many writers unless in Europe & America are now dreading a wide remission of enthusiasm, for high moral ideals. In a forcible article on the decline of culture,

E Benjamin Andrews says, wealth-gaining

The Decline of Culture, in
the West

is an obtrusive, all-engrossing phenomenon over shadowing all else,—massive, ubiquitous,

obstreperous, never out of sight or out of mind. By its size it occludes the Sun the noise of it deafens reason's ear. We do not refer namely to those professedly engaged on amassing riches, the

frenzy spreads to all. If any perchance ask how much one must have to live on comfortably, the chorus answers at once "The utmost you can get." It was said by him of old time "Life is more than meat," the modern criterion would seem to be that life is dentical with meat, and the body with raiment." The West has still to distinguish between wealth as means and wealth as an end. Her faith has to be reformed. Perhaps she will have to wait for another Messiah. In the meanwhile let her not force her present ideal of production on the social system of the East.

Asia's Question to Europe

The venerable East still distinguishes between means and ends. Rightly has Okakura-Kakuzo asked, the West is for progress, but progress towards what? When material efficiency is complete, what end asks Asia, will have been accomplished? When the passion for fraternity has culminated in universal co-operation, what purpose is it to serve? If mere self-interest "where do we find the boasted advance? Size alone does not constitute true greatness, and the enjoyment of luxury does not always result in refinement. In spite of the vaunted freedom of the West, true individuality is destroyed in the competition for wealth, and happiness and contentment are sacrificed to an incessant craving for more."

There is in western society a wide-spread contempt for the simple life, a falling off in men's desire to promote the things of the mind. Charles Wagner says that there is in modern society not only less thought than once of ideals but less mobility of mind as well. In ancient society, the people had variety in uniformity, in modern society they have monotony in the midst of change. Industrialism and fashion tend to crush out all originality, and flatten individuals into specimens. "The city possessing the engines of civilisation floods the country with its products, beating down and running out local peculiarities, local manners, costumes, provincial songs and idioms disappear. Towns and villages drained debilitated, each show of its individuality are but the feeble images of cities. Professor Royce rightly points out the mischief of this bleaching process pointing out the incalculable benefit to the national character of local idiosyncrasies." "Industrialism, again, involves another curse, the division of labour as destructive of spiritual as it is creative of temporal wealth, and not confined any longer to mills and shops but felt as well on 'change at the bar,

Ethical dangers of Western Industrialism, of the system of Concentrated Production

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in newspaper makings and even in teaching. Everywhere specialisation breeds pettiness, an arid mind, thinking with the spinal chord instead of the brain. Thus the modern phase of industrialism in the west is tending to destroy the very roots of culture and originality, thus defeating its own ends. But while we should

Where Production on a Small Scale is an evil danger in the opposite extreme

deprecate the present tendencies of the Western system of industry, we cannot at the same time ignore the dangers of production on a small scale, the characteristic feature

of our social and economic life. While in some countries in Europe real well-being and culture have been sacrificed in the interest of concentrated production and large scale industry, in the lands of small industries, Belgium, Italy, Austria and India as well, well-being has been equally sacrificed in other directions. The craftsmen in these several countries follow the same monotonous process of production with an unremitting and severe drudgery that kills both body and spirit. Skilful as they are in a particular groove, they are deficient in general intelligence and lacking in that originality and initiative which alone can give vitality to a craft. There is in fact no fund of inventiveness on which to fall back in times of stress, no exercise of artistic power and individual

The unremitting and severe drudgery of craftsmen, their lack of originality

judgement which can save the art from being stereo-typed. In fact the essence of the real handicraft, the thinking power of the artisan imposing his personality upon the

handi-work is lost. Life becomes a routine and the individual more or less a machine without rising to the life of a self-conscious reflecting intelligence. India should have to steer clear of the excesses of the two methods of production and sub-ordinate them to the purposes of a higher, nobler existence. If she is to develop industrially, let her adapt these methods of production to herself so that they can minister to the higher needs of men as well as satisfy the immediate necessities of life. Let India *modify the factory industry as she introduces it into her own social organism* and let her not at the same time forget her ancient domestic industries but let her reform them on altogether new lines. But in the wake of the material aggressive civilisation of the west have come to India the western art ideals,³ which in at moment of passionate admiration for the success of the Western

methods of life have been welcomed by India. And India has allowed herself temporarily to forget the life ideal which she had been following through the centuries. The domestic industry is being annihilated everywhere in India and the cruel and inartistic method of applying mechanical power is adopted in close and distinct imitation of the Western system of manufactures.

In spite however of the gradual supersession of the small by the large industry all over our country, spoken of above there is no fear of complete extinction of the hand-industry in the competition with the factory. The small industry has always certain monopoly advantages on account of which it has lived and will continue to strive side by side with production on a large scale. As it has been well said a study of the evolution of industry will reveal the fact not sufficiently recognised that *pari passu* with the development of scientific industries on a large scale there is always a corresponding development of subsidiary

as well as independent smaller industries, including handicrafts, art industries and home-industries. This is well illustrated in the modern industrial history of European countries, specially those on the continent. In fact, it is a fallacy to suppose that natural selection in industrial evolution is only a process of large organisations surviving and weeding out the smaller in the struggle for existence. In the industrial world, 'fitness' does not depend on size alone but is determined to a large extent by adaptability to environment and by the conjuncture of circumstances which the organisation has to utilise. In this way *there is always a place for small industries in the course of industrial development*, a place which can never be abolished but will always continue to exist, simply because it cannot be filled by large industries." It has always

For the latter presupposes certain economic conditions which are not universally realised

to be borne in mind that a factory industry presupposes certain economic conditions which are by no means universally realised. The demand for the goods must have to be not only wide and large but steady and continuous as well, otherwise the organisation of business will be found unprofitable. Another condition presupposed is the growth of capital, not only in the form of machinery but also in the form of means

The conditions (a) as regards Capital,

of communications and exchange. Only the improvements in machinery as well as the mechanical skill necessary to run it can make specialisation and organisation technically possible, while

the railways, telegraph, and the banks widen the markets and make such organisation economically possible. Again, another main requirement of the employment of machinery or large business is that the different processes of production shall permit of being carried on simultaneously. Indeed, this feature of industry is almost entirely lacking in what may be called the 'culture industries',—agriculture, sericulture, horti-culture or pisciculture, which have therefore defined all attempts at minute specialisation

Even here also certain cultural products have been laboratory and manufactured products through the achievements of organic chemistry. Again, the production of quickly perishable commodities is of necessity local and cannot economically be undertaken by machinery. Thus the work of the dairyman, the baker and the butcher cannot be largely aided by machinery except when preservative processes have been discovered or facilities of means of transport established. It is further doubtful whether the large scale producers can secure that minute and economical supervision which characterises the small industry. The ownership and control being combined in a single man in case of the small industry, the small producer shows a zeal in the business which is absent in the director of a large establishment. It is sometimes claimed by experts that in many lines of business, a plant of moderate size is the plant of really maximum efficiency in regard to capital and labour costs. The small producer, again, has a distinct advantage in his greater power to know the personal wants of his market¹. He is in a far better position to consult and satisfy the individual tastes of the consumers than his greater

(b) The Nature of the Industry
(c) The Character of the Demand

1 Dr Marshall has observed "Of two businesses competing in the same trade that with the larger capital can nearly always buy at the cheaper rate, and can avail itself of many economies in the specialisation of skill and machinery and in other ways which are out of reach of the smaller business, while the only important special advantage which the latter is likely to have consists of its greater facilities for getting near its customers and consulting their individual wants."

rival We have already pointed out in the preceding section that perfection of routine work being the special faculty of machine production, machinery cannot undertake the work where fashion fluctuates or the individual taste of the consumer is a potent factor In many industries the personal element plays so large a part that the small producer will for a long time hold his own even if he cannot oust the large producer from the field This is

Case of art industries,
industries, which satisfy
individual needs and tastes
as distinguished from the
routine needs of men

especially true of fine arts and the decorative industries which are therefore far more suitable to hand-labour than to the machine Again, even in the region of ordinary material consumption, in the more skilled branches of shoe-making, tailoring and other clothing trades, the individual character of the demand, i.e. the element of 'irregularity' has limited the use of machinery A similar case retains human motor power in certain cases to co-operate with and control machinery, as in the case of the sewing machine. If the wearing public consent to wear clothes conforming to certain common patterns and shapes which are approximate "fits", machinery can be used to make these clothes, but if every person requires his own taste to be consulted, and insists upon an exactitude of fit and a conformity to his own special ideas of comfort, the work

can no longer be done by machinery and
Machine vs Hand-labour will require the skill of an "artist" It

is precisely upon this issue that the conflict between machine and hand-labour is fought out As long as the consumers refuse to conform to a common standard, hand-labour cannot be dethroned from industry, and in proportion as they develop individuality of taste, handwork or art will play a more important part in industry, repel the further encroachments of machinery every or even drive it out of some of the industrial territory it has annexed. But the highest division of labour which will apportion machine to the supply of the routine needs of life and art to the supply of individual needs and tastes, constantly growing and changing in variety, has not been yet attained in industrial life and organisation.

There are also a few other factors in favour of the small industry which are particularly true of India In the rural tracts

of the country large markets are more or less unknown and hence there is small scope for the large industry

Conditions favouring the small industry in the rural tracts of our country

The circulating capital being small in amount in these tracts, a small industry

which requires but a small initial outlay is to easier start. Though skill and machinery cannot be specialised, the small industry will be able to train good all-round workmen. It will also be able to offer low prices the cost of carriage and transport being saved as it would supply only the local wants. The commodities manufactured by the small industry, being in general demand and not subject to changes in fashion, the sales are fairly large while the necessary stocks are small, and the capital invested in the industry can be turned over very rapidly with little trouble and no risk. Again the conditions of our agriculture leave the cultivators out of employment for several months in the year. This vast amount of surplus labour might be utilised in favour of the home or cottage industries in our rural areas where their raw materials are abundant and the markets near as well as sure.

SECTION III

Tendencies of modern industrial life in the West and their lessons for India.

We have already seen that in many branches of industry, the cottage system is not only inevitable but has no rival. Its place can not be filled up at all by the large industry. We now come to those cases in which the small industry and the large industry compete with each other in producing the same goods. The large industry can in these avail itself of all economies out of reach of the smaller rival, but these now tend to be counteracted, in favour of the small industry, by the recent developments of applied science in the West. Modern inventions in engineering science are revolutionising the choice and methods of distribution of power, neutralising the advantage of the large scale industry in the matter of concentration of power.

Hitherto science in the West enabled the big manufacturer to crush out his rival small manufacturer. Recently, however, science is used not to discomfit but rather to fortify the handicraftsman against

the capitalist manufacturer “ Those who have followed recent

Recent developments in applied science place the artisan using a small power in a much better position to compete with the larger user of power than was possible a few years ago.

developments in Europe cannot be blind to the fact that within certain limits the progress of applied science is rapidly tending to extend to the small workshop and the individual craftsman the advantages which

since the introduction of steam power have been the monopoly of the capitalist” ¹ Indeed the prospects of the small manufacturer have improved a great deal There are greater prospects of the small manufacturer being able to compete with the big than there were a few years ago, as recent progress in science and the mechanical arts has done much to raise the efficiency of working on a small scale. Not by any means in all directions but in some and those more particularly which are likely to flourish in India. *The cost of power has been commonly reduced especially in the case of small plants, so that the small user of power is now in a much better position to compete with the large user than was possible only a few years ago.* There is in consequence a perceptible re-action against production on a large scale and a tendency to make greater use of the elasticity which allows small works more readily to adapt themselves to changes and fluctuations in trade, cyclical

Consequent movement in the continent of Europe in favour of the small industry

or otherwise ² There is in fact at present a movement in Europe in favour of the small industries

The Govt of Austria has for many years been spending large sums on the development of the domestic handicrafts with the result that in many villages and small towns throughout the empire women and children are making imitation-jewellery and quantities of small wares chiefly for export to India Holland has also developed a lucrative industry in hand-painted cloths, following in every details the technical methods of the cotton printers of Masulipatam or elsewhere

¹ E B Havell Indian Administration and Art and Crafts in India, Hindustan Review, April 1909

² Alfred Chatterton—The Indian Industrial Progress Science and Progress, 1910.

Germany and Italy also are now following Holland's example. The Govt of Roumania also has in a few years by the aid of technical experts built up a most prosperous domestic industry of over 12,000 looms which holds its own most successfully against powerloom mills. The Govt of Hungary has for some years been supplying machinery to independent craftsmen (master workmen). Between 1899 and 1909, about 1,922 craftsmen were supplied with machines of the aggregate value of 37,62,567 crowns. Only in 48 cases the machines had to be declared forfeited, because the craftsmen in question were unable to use them or keep them permanently working. Out of 1,922 craftsmen 434 work in iron and metal and 390 in clothing industry. A considerable number of machines has been supplied also to co-operations, 219 cases in all. The measures taken by the state for the development of industry have been remarkably successful, the proportion of failures being a very small one, whether we take manufacturing industry or independent craftsmen. (Alexander de Hollan, *Economic Journal*, March 1911.) Thus while Austria, Holland and Germany and Italy are developing profitable handicrafts at India's expense, the Indian handicraftsmen are being driven to agriculture or into the factories of the capitalists both for want of efficient instruction and organisation.

Indeed throughout Continental Europe mechanical force on account of the most recent developments in science, has been applied not only artistically but even more effectively in the cottage rather than in the factory system. The cottage industry uses small motive power and is thus cheaply or effectively able to compete successfully with the factory system. And it would indeed be a most mistaken economic policy in India to break up our old organisation of rural industry and encourage our artisans to leave their trades when the adoption of the latest developments in science would enable them to use mechanical power quite as easily as the mill-runners. Let us, on the other hand, rehabilitate our domestic industries and reorganise the trade-guilds and industrial castes by adopting the mechanical improvements as are needed in their present condition. The two elements which are now wanting in our domestic industries are the motive power and the machine tools. The artisans who are capable of laying out small capitals can with comparative ease procure for themselves the second at a moderate price, but hitherto it had not been the same with the

first. The carpenter, if he is furnished with a very cheap motive power which is necessary to set his circular saws and other machine tools in motion will be able to work in his house as well as a great manufacturer. In this way he will be able to utilise his small group of machines in a variety of ways, until he will begin to acquire a perfect command over his work which he could not have been able to attain, if he had been a workman in a great factory. In spite of the advantages on the side of the big manufacturers the small manufacturer will be in a position to compete with them. He will find an energetic support in the collaboration of the members of his family and in the moral element which will be the consequence of the work in his proper home. He will form a number of assistants and apprentices, or, in fine, a complete industrial organisation quite analogous to that of the ancient professions, but differing from it only in the introduction of the machine. The improvements of applied science can

Electric power can be
cheaply transmitted to cot-
tages

now supply him with the motive power at a very small cost. The modern developments of the use of electricity might now

transmit motive power cheaply to the cottage of a small producer. The electric installation is not only less expensive but also relatively more productive than the steam-installation. The economic advantage of the larger over smaller installations is not so great as in the case of steam, while the absolute productiveness is greater in the case of electricity. Thus the electric installation has one tendency to take large dimensions. The advantage of storing electric energy in batteries is considerable especially to a craftsman whose work is intermittent. Again the motor can be used even by the most unintelligent. By the inventor's skill, the mere pressing of the button sets it going while any chance of accident is removed by safety appliances. Again, there have been several petty motors which have proved very successful in the West. The most satisfactory types of them are the water pressure engines, the gas or oil-engines. The latter have now become the formidable rivals of the steam-engines, and even very large sizes are now tried. It cannot indeed be doubted that gas will give steam only a subsidiary place in future. The small petrol engine of motor cars have great advantage and they have been improved a great deal. Their peculiarity of having little

bulk and proportionately large power has made them useful for a variety of purposes, *e. g.* lawn-mowers, pleasure-boats, aeroplanes etc. As regards the respective advantage of oil and gas engines, the relative cost of coal and oil has an important bearing on the question of economy of the two types. The cost in the case of oil-engines is five times that of the gas engines, yet the popularity of the former has been steadily increasing, for reasons such as less consumption of water, less attendance, less risk of breakdowns, less space, less upkeep, less fuel wastage at starting and no nuisance of smell, etc. In industries where continual working is needed, gas is more convenient. But in most cases, where the load factor is low, say 50 hrs., oil-engines are much more suitable. The best oil-engines at full load use 4 lbs. of oil per Brake Horse power, while the best engines will take about 8 lbs of coal. These machines can, in the limited sphere of action from 6 to 3 horse-power, contend successfully with the steam engine. Their work is cheap, thus they are the veritable motors of the people carrying with them the germs of complete transformation of the Small Cottage domestic industries. By adopting such motors, we can give our artisans working in cottages the motive power under fair conditions of economy, practically equivalent to those which secure to the capitalist the steam engine of great power, revive by this means the domestic industry where it exists and re-establish it where it has disappeared.

“ If we use the gas in an engine it is possible to get a good economy. The reason is easily seen, when one realises that the fuel is burnt in the cylinder of a gas engine and not under a boiler, which makes steam to deliver to an engine. In the latter case we have the efficiency of the furnace and the inefficiency of the boiler, as well as the radiation of the steam pipes and cylinders, items which do not appear in the heat balance sheet of the gas engine. . . . Again, we may use oil as a fuel for firing a boiler or for driving an engine. As regards the efficiency of the engine as compared with the steam engine, the one is 34 p c as compared with 9 p c of the heat value of the fuel” (The choice of Power By Mr. S. T. A. Mills, A.M., L.M.F., Indian Trade Journal, May 16, 1912)

“Tendencies of Engineering Science”, by A. Sen. The Indian Guild of Science and Technology, }

If the craftsmen are unable to use the small power or the mechanical tools on account of the want of capital, let them adopt cooperative methods. By cooperation, again, the small producers

These motors can be purchased by cooperative methods

can secure much the same opportunities as to invention and improvement of processes and utilisation of waste which regularly inhere in large scale industry. Thus the advantages of large scale production are secured while the small producers do not sacrifice their autonomy, initiative and personal interest. As Charles Gide

Co-operation in Industry

has observed, cooperative association—under the different forms of productive asso-

ciations, societies for the purchase of raw materials or for the sale of finished goods, or societies for mutual credit,—aided by the mechanical inventions that are substituting electric power for steam, and enabling us to transport motive power from the place

its generation to the place of its application, will permit numerous new forms of industrial enterprise capable of resisting successfully the encroachments of large scale industry. Devices for distributing motive power can also be availed of by the small producers by means of cooperation and this will place them on a plane of equality with large concerns, as regards the cost of power

Let us thus reorganise our methods of production bringing back to our midst old ideals of life and art which we are abandoning for those of the West. Apart from the question as to which of the two ideals is the superior let us remember that no industrial ideal which has not its origin in the racial characteristics of a particular people has any chance of being followed successfully. Let us therefore forego the attitude of snobbishness which leads us to imitate without consideration. While we adopt Europe's experiments, let us preserve the exquisite styles and patterns of our own country, our own artistic traditions and industrial ideals, remembering that the revival of industry can come only from within. It must be from India herself, along the ancient roadways of the race that the great voice shall be heard. Victory from within or death without. And when the ordeal is past and the victory won who knows that one day it may be the mission of India clinging fast to the philosophic simplicity of her ethical code to solve the problems

that have baffled the best minds of the West, to build up a sound economic policy along modern scientific lines and at the same time to preserve the simplicity, the dignity, the ethical and spiritual fervour of her people I can conceive of no loftier mission for India than this, to teach philosophy to the West and learn its science, impart purity of life to Europe and attain to her loftier political ideal, inculcate spirituality to the American mind and imbibe the business ways of its merchant ”¹

Already a new philosophy of energism and active life has been developed in the country which involves a profound intellectual revolution. The creed of inactivity and quietism,² so long favoured by Indian ethical sentiment is not accepted now. New national forces have been awakened and the social life stirred to its inmost depths. Modern scientific achievements of the West are no longer unfamiliar to the people. On the other hand, the people are adopting Western methods and processes, and are rivalling the West in scientific mastery. But if the country is to adopt the philosophy of energism, it does not, after all, follow that it will change its most underlying and essential ideals.

1 H H The Gaekwar of Baroda's inaugural address (Industrial Conference, December 1906)

2 Renunciation still remains the highest virtue. But it is more than weakness and self-deception for it presupposes a mastery of the world of fact and action and requires the power to rise superior to ordinary struggles and ambitions. Through mental energy and understanding of the world only can such mastery be acquired. "Concentration, calmness and inactivity are the result of centralisation of great powers,—calmness is the mother of tremendous energy," these words of Vivekananda express that "valuation which sets mental strength high above all mechanical contrivance, which appreciates that by the side of the thought-energy of the human mind everything else is significant." This is the greatest paradox in philosophy that the West, where man first became conscious of his powers, where he learned to master the forces of nature before which the oriental peoples bowed down in awe, should invariably have to yield to the Orient in appreciating the intense power of that very human mind and its activity."

“Make yourself strong so that you may retain the right to be yourself,” that seems to be the temper of China, Japan, and India ; and the self of the Orient is now, and intends to remain, highly spiritual. Mastery over external nature, indeed, attracts as part of the regime of energy or activity, but to the Orient the spirit of man, the mysteries of his psychology, the grandeur of the limitless vistas of development of which the human soul is capable and the heights to which it may attain, are more fascinating than any of the phenomena of external physical nature. It is to orientals a source of great inspiration and enthusiasm to think that they are called to give to the world, and to perpetuate in it, this noble spirituality. They have come to recognize the merits of the West, its high individual development, its energetic activity, its clean and successful methods, its complete system of machinery, but they also well understand that the human spirit does not come to its own with all this efficiency and outward success, that machinery kills souls, that mechanism destroys spirituality. When they see the West striving to introduce mechanical ideas into the most sublime realms of thought, standardising everything upon the basis of computed units of efficiency, they feel the Orient still has a message to the world that will be heard. It is from materialism that they hope to bring salvation. The manner is not yet clearly seen; but as the West glories in its efficiency, so does the East draw comfort and confidence from the thought that its *Spirituality is to be the salvation of the world*. This destiny it can fulfill only if its newly aroused energies are directed to the achievement of aims that have a spiritual meaning and value.¹

1 Paul S. Reinsh. *Energism in the Orient*, The International Journal of Ethics, July 1911.

SILK IN INDIA.

BY

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Silk is the strongest, most elastic, most lustrous and most valuable of all textile fibres. The thread is composed of several finer filaments thrown out by the silkworm from two large silk glands in their stomach which nature has provided it with, when it is mature liquid silk comes out of the mouth through two microscopic holes and as soon as it comes in contact with air it becomes solid. The worm envelopes itself with this thread and forms its cocoon to protect it from harm in the pupa or chrysalis stage when it lies dormant. After certain period it changes into moth, pairs and lays eggs which hatch once to seven or eight times in a year according to race and climate. The one-brooded races (univoltine) which yield superior and large quantity of silk are generally reared in Italy, France, Hungary, Japan, China etc. while the many-brooded races (multivoltine) which yield inferior and less silk are reared in India (except Kashmir) Siam and Anam etc. Raw silk or reeled silk is made by putting the cocoons in hot water and drawing filaments of 6 to 20 cocoons into one thread on a reel. There are some races from which one uniform single thread cannot be drawn and hence they are carded and spun like cotton thread, the thread from these is called spun silk. There are various kinds of silk such as Mulberry silk, Tussar silk, Eri silk and Mooga silk. Reeled (Mulberry) silk is finer and more costly.

Dr Balfour states in the Cyclopædia of India that there seems
to be no doubt that China is the country
History, China where the product of the silkworm was

first used as a material for textile fibres and that the industry has gradually radiated from China as a centre till it covers at the present day a number of very widely distributed areas of very

diverse climatic conditions The Chinese historians carry back the cultivation of the Mulberry to the period of myths If they are to be believed, the art of silk reeling, in China, was known in the time of Fohi-lir, a century before the date usually assigned to the Biblical Deluge We read that even the Empress Silvguchi wife of celebrated Hoangte (2602 year B C) did not disdain to share in the labour attending to the care of the insect as well as in those of the loom, the invention of which has been attributed to her. In fact she is looked upon as tutelary genius and has special altars of her own A series of Imperial Edicts and voluminous literature of practical treatises testify to the importance of the industry and the care taken to foster an art which is considered by M. de' Rosny, to be best fitted to promote the morality of the people and extinguish pauperism in the Empire.

Historians do not tell us at what period silk was first utilised in India The date of the introduction of the silkworm into India has been the subject of some research and discussion by Pariset de' Rosny and other writers ; but the question still seems an open one. A Sanskrit word Kausheya or Koushika meaning silk occurs in the Rigveda, the Ramayana, the Mahabharata and the Laws of Manu While all due deference is to be paid to the opinions of such eminent people as Prof Balfour and others one is led to suppose that India may not after all be indebted to China for the introduction of silk here We see that when performing religious ceremonies it is enjoined that silken garments should be used in India This points to the fact that probably silk, from very ancient times, has been indigenous here Even in the oldest Scripture (the Rigveda) we read that the bride is to worship the fire decked in silken cloth. The Rigveda was compiled 4500 to 5000 years ago according to R. C Dutt

Moreover when we examine critically the different varieties of Indian silkworms we find that many are quite distinct from the Chinese varieties Among the recognised castes we find that the caste of the silkworm rearers (Pundas) is quite wellknown from old times.

All these point to the probability of an independent origin of the silk industry in India.

Coming to times later than the Vedic period it is of interest to note that in the Ramayana the first edition of which was penned about 1900 years before the Christian era, Sita at the time of Swayambhara is described as apparelled in a yellow cloth of silk. The daughter of the King of Videha received among other gifts soft silkcloth, the ladies sumptuously arrayed in silks welcome the arrival of Sita. The corpse of the King of Dasarath is wound in silken cloth. The great lawgiver Manu describes how silkworm rearing and cocoon reeling were done in India in his age. From the Mahabharat we know that silks and brocades were presented to the Emperor Yudhishthira by the Maharaja of Kaushikakaccha (near Malda) at his Râjasuya Sacrifice.

India held the first position in the world in the silk trade for ages together. The Indian Agriculturist of November 1st 1906 says "Long did the opinion prevail that China was the great and original country for silk. But the researches of botanists and mercantile men in the present age have thrown a light upon the subject which has tended to explode and expose the error of that opinion. It has now been found out that silk is as much indigenous to China as to India and Burmah, more than this, India produces a greater variety of silk than China. Like silk the tea plant, also was thought to be a special *vegetation* of China until it was found to grow wild in Assam. The great silk region in the kingdom of nature has been indicated to extend from China to India in a South West direction—and the fact is that these two countries have for centuries been the contemporaneous cradles and seats of silk and silk manufactures, developed separately by the independent genius of the two nations." -

Silk manufactures as well as the art of obtaining the material were known to Indians at a very early period. In the second century of the Christian era silk used to go to Rome from Barygaza, Usiris and other parts on the Malabar coast through the Red sea. The trade in silk constituted one of the three principal trades of ancient India with the Romans. The courts of the Greek Emperors of Byzantium who vied with the sovereigns of Asia in grandeur and magnificence were richly decked in silks. The silk trade in ancient times was carried on directly with India for more than 600 years. Both Colebrooke and Elphinstone testify to

these facts. According to Monsieur Boitard, a French writer, two Byzantium monks smuggled silkworm eggs from Serindh a neighbouring province of the ancient Kingdom of Delhi but according to many writers they smuggled the eggs from China to their native place in the 6th century from where the industry spread to Sicily, Italy, France and Spain in the 12th Century which have become formidable rivals and competitors of India. The Caliphs of Bagdad kept up a demand for the silk brocades of India in the place of the Roman and Greek Emperors; and Bagdad became the market that Rome and Constantinople had formerly been in the 13th century. During the sovereignty of the Moghul emperors (specially Akhbar) silk manufactures met with great developments. Grandeur in its highest type was their study, and rich silk workmanship largely contributed to its display. Abul Fazl says "A variety of new manufactures are established in this country, and the cloths fabricated in Persia, Europe and China have become cheap and plentiful. The skill of the manufacturers increased and the Indians gained a complete knowledge of their profession. The greatest impetus was imparted by Empress Nur Jahan who, during her residence with her first husband in the district of Burdwan, having taken a fancy for the Birbhum silk fabrics afterwards set the fashion for them at the Imperial Court, and in India a fashion lasts for several centuries. The Omrahs and other Grandees of the realm dressed themselves in rich silks. The Divans were spread with rich silk carpets. Brocaded silk cushions became the principal adornment of the rooms. The article was used in hangings, and housings, and howdahs, in banners and streamers, and in fans and parasols. Hindu gods and goddesses were decked in silk. Monsieur Bernier the celebrated French traveller describes the throne room of Shajehan as surmounted with a richly embroidered velvet canopy. The pillars of the hall were magnificently ornamented with gold tapestry and the ceiling was covered over with beautiful flowered satin, fastened with red silk cords, having at each corner festoons with gold tassels." According to Bernier the variety of scarfs, turbans and brocades made in India is incredibly large. Every description of silk goods—satin, velvet, damask, brocade, chehe, and tussar—were then made by the Indian manufacturers. Their design and taste have been universally admired, and the perfection of their workmanship is yet unrivalled. In the *Ain Akbari* no loss-

than 28 kinds of embroidered cloths and 38 kinds of silken stuffs with their current prices have been mentioned

In Bengal, Malda probably was the centre of silk trade. Sir George Birdwood (Indian Arts, page 375) as also Dr. Hunter mentions that it is on record that in 1577 Shaikh Bhiku of Malda sent 3 ships of Malda silk cloth to Russia by the Persian Gulf. From the Travels of Ludovico Divar Hema of Italy we know that 50 ships of cotton and silken goods used to be exported annually from Malda. The East India Company used to buy large quantity of raw silk and silken goods from India from 1600-1619 (Sir George Birdwood and Mr. Foster). Cambay, Masulipatam and Surat were the chief manufacturing places then. Bernier in his Travels (1656-8) says "There is in Bengal such a quantity of cotton and silks, that the Kingdom may be called the common storehouse for those two kinds of merchandise, not of Hindusthan or the Empire of the Great Moghul only but of all the neighbouring kingdoms and even of Europe". Tanernier (Travels in India, 1676) tells us that in his time Kasimbazar (in Murshidabad) furnished about 22000 bales of silk annually each bale weighing 100lbs "The Dutch", he continues, "generally took either for Japan or for Holland 6000 to 7000 bales of it and they would have liked to get more, but the merchants of Tartary and of the whole Moghul Empire opposed their doing so, for these merchants took as much as the Dutch and the balance remained with the people of the country for the manufacture of their own stuffs. All these silks are brought to the kingdom of Gujarat, and the greater part came to Ahmedabad and Surat, where they are woven into fabrics," Bernier says "The Dutch have sometimes seven or eight hundred natives employed in their silk Factory at Kasimbazar, where in like manner, the English and other merchants employ a proportionate number. These facts go to prove that silk rearing, reeling and weaving were in a flourishing condition in India long before the advent of the Dutch and English traders. In 1700 Sir George Birdwood writes in Industrial Arts of India "A law was passed by which all wrought silks, mixed stuffs, and figured calicoes, the manufacture of Persia, China and East Indies, were forbidden to be worn or otherwise used in Great Britain. It was particularly designed for the protection of the Spitalfields silk manufacture but proved of little or no avail against

the prodigious importation and tempting cheapness of Indian piece-goods at that time " For a long time Indian silk goods held their own "but once the machine-made silks took their place in the markets of the world, the doom of the hand-loom industry was so to speak, sealed and the increasing cheapness of cotton textile still further tended to depress a beautiful art and to rob it of its native stimulus without which all art inevitably tends to decay". (Indian Textile Journal, August 1900)

	In 1772 about 180,000 lbs. of wound silk was exported to
	England from India, in 1785, 324,307 lbs.
Foreign trade Export	in 1795, 380,352 lbs, but 20 years later
	Bengal supplied 736,081 lbs. (Milburn's Rise and progress of
	the silk trade) In 1805 the total exports were 835,904 lbs. ;
	in 1825 they came to 919,436 lbs. , in 1835 about 727,535 lbs ;
	in 1867-8 about 2,226,201 lbs. valued at Rs. 15,532,290 In
	1877-78 the total exports from India were 1512,819 lbs valued
	at Rs 7,035,493 ; in 1887-88 about Rs. 4 808,000 worth of silk
	was exported to foreign countries, in 1892-93 about Rs 6,175,000 ;
	in 1900-01 1,604,275 lbs. valued at Rs 5,122,057 , in 1908-09
	about 1,833,644 lbs. valued at Rs. 5,405,077 ; in 1909-10 about
	1,207,561 lbs. valued at Rs. 5,075,739 and in 1910-11, 1,847,401 lbs.
	valued at Rs. 5,055,287

The value of the exports has in recent years been steadily decreasing Although the quantity of silk exported has not diminished very materially the value of the export declined to a thread of what it was In Europe the utilisation of waste silk began to be understood from the year 1857 and consequently the exports of India changed their character The returns rapidly manifested a decline in value due largely to the increased quantity of export of waste silk and cocoons in place of the reeled silk. With the opening of new ports to foreigners raw silk began to be exported to Europe in large quantities from China and Japan and Bengal silk came into disfavour. The superior silk goods, which India produces, is consumed in the country—the quantity consumed is very much larger than that exported to foreign countries The export of corahs and other inferior silks has been declining On average India exports about Rs 2,000,000 worth of silk pieces annually now, while in 1882-83 she imported £1 95 million pounds and in

1907, 2 07 million pounds worth of silk. According to M^r. Nathis Rondst of Lyons the greatest authority of sericultural statistics India produces about 12,00,000 seers of silk and consumes about 13,20,000 seers of silk per year

In 1876-77 the import of silk was valued at 58½ lakhs of rupees,
in 1881-82 Rs 135 lakhs, in 1900-01 Rs

Import

1,66,58,108, in 1904-05 Rs 2,11,81,502 ;

in 1907-08 Rs 30,000,000. These show a remarkable expansion Bombay is the chief distributing centre, raw silk from China and Japan and spun silk from Europe are imported here and are carried through the presidency of Bombay to the Punjab and even to the United Provinces. The Punjab may be called the great consuming province and Bengal the great producing province. Bengal silk is carried to Nagpur, Poona, Amritsar, Madras and to other centres of weaving. It is curious that in Bombay which has to depend upon raw material, the silk manufacturing industry has taken comparatively large and active proportions, while in Bengal the very centre of Indian silk production there is only one big silk mill to be found. The Bombay mills manufacture in considerable quantity for the Burmese market which is much closer to Bengal and there is also a large market in U P for the out-turn of silk looms, but Bengal is content to produce in annually diminishing quantities for an unprofitable export market and confines its manufactures to a few corahs and other similar goods made by hand. Want of enterprise, originality and manufacturing skill is the root cause of the decline of the silk industry here. It is indeed melancholy to record the continued decadence of the Indian silk industry as far as any rate as the production of raw silk is concerned. The manufacture of silk keeps up pretty steadily but a considerable proportion of the raw material required for manufacture is imported from China, Japan and Europe.

It will not be out of place if we take a review of the sericultural conditions of all the provinces and states in India

Expert opinions hold that the Bengal races of silkworms are
degenerating and the industry will be doom-

Bengal

ed in a few decades if a stronger and a healthier race of silkworms cannot be established soon. Nearly

50% of silkworms die of diseases as the rearers cannot get disease-free eggs and all the hereditary rearers of Bengal who depend entirely upon it for their livelihood are becoming bankrupt and many are leaving the profession for a better one. The Government of Bengal have established some nurseries in the districts of Murshidabad, Rajshahi and Bogra for the supply of disease-free eggs at some reasonable rate and for helping the rearers of a few model rearing villages with disinfectants and breeding appliances, have started three sericultural schools where *bona fide* rearers are admitted. The general control and management of the whole operation are vested in a committee. One French expert has been appointed to make experiments in hybridisation. The Maharaja of Kasimbazar has established some nurseries for supplying disease-free eggs. Messrs Anderson Wright & Co silk merchants of Bengal are doing valuable service by their experiments in Manipur and Ramnagore and selling univoltine eggs to applicants. The Maharaja of Tipperah also has been trying to introduce silk culture in his state. The above nurseries cannot produce more than Rs 15,000 worth of eggs whereas the Bengal rearers require about 2 lakhs of rupees worth of eggs annually.

The European companies who have got silk Filatures in Bengal for reeling are winding up their concerns as there is no profit in the business and as sufficient cocoons are not available for big establishments and the Bengal system of reeling machine is being set up in large numbers in many houses.

The weaving of silk cloth which has been on the decline in recent years, is reported to be reviving in slow degrees. The Bengal silk factory is catering for the Burmah market, small factories with three or four looms are being started for silk weaving. The chief drawback is the want of proper organization — No uniform plan exists for the disposal of silk fabrics in the different districts, individual weavers going to money-lenders or shopkeepers, carrying their goods in their own hands for sale is the general rule. occasionally one rich weaver succeeds in securing cloths from a number of weavers, middlemen practically fix their own price and leave the weavers only a living wage, some weavers either hand over the cloth to the money-lender who advanced them the cost of the thread or others sell on their own account, others again sell to a middleman.

Assam is the home of Eri and Mooga silk In 1889-90 she exported about 1300 mds of Eri silk but

Assam

at present the industry is stationary or on

the decline. The hill tribes generally rear small number of worms with the castor leaves from their homestead lands and then spin and weave them The possibilities of eri silk are great, the Pusa Research Institute has taken it up and is advocating it as a cottage industry A small quantity of mulberry silk is also produced in Assam. Experiments with univoltine eggs proved successful in the Shillong Fruit Garden and Khasi hills Messrs. Anderson Wright and Co are trying some experiments with univoltine silkworms in a place near Manipur All the submontane regions are suitable for univoltine mulberry silkworm rearing.

Behar is the chief distributing centre of Tussar fabrics which take a very important place among

Behar

the manufactures of the district of

Bhagalpore. Cocoons are collected in the jungles of Singbhum, Manbhum, Bhagalpore, Sonthal Perganas and Mourbhanj etc. and taken to Bengal for reeling, spinning and weaving. Bafta and Tussar cloths are carried to different parts of India and Europe from here The industry is perhaps not in such a flourishing condition as it was a few years ago, but still it is of considerable importance; about 2000 weavers earn their livelihood by the manufacture of Tassarcloth alone in the district of Bhagalpore The Tussar Farm at Onabassa was started on the lines laid down by late N G Mukherjea for distribution of good eggs to the rearer by the Govt but has been stopped recently The Agricultural College of Sabour has started eri silkworm rearing In the Imperial Agricultural College of Pusa training in eri and mulberry silkworm rearing, spinning, reeling, dyeing and weaving is given to students who come from different provinces of India. Univoltine acclimatised mulberry silkworm eggs, eri eggs, mulberry seed, castor seed and instructions through correspondence are given free to any applicant Experiments on crossbreeding are carried on. Eri silk as a cottage industry has been shown to be quite suitable in India Some indigo planters have taken to rearing and weaving eri silk and many have commenced rearing eri silkworms Successful crops of univoltine mulberry cocoons have been obtained

in November and February Like the Madras school of Arts and Industries which has done much to promote the growth of an important industry (the aluminium) the Institute is trying to revive an indigenous industry which is slowly and silently dyeing away

Mirzapur is the chief Tussar weaving centre ; Benares and Agra are the silk weaving centres—the

The United Provinces

former being the manufacturing centre of the brocade industry , it has from ancient times been noted for the excellence and purity of its silk fabrics, the chaste designs have elicited admiration even from those who have seen the work of Kashmir weavers Slow outturn of cloth is the greatest defect of the weavers , it is expected that if they adopt improved looms they would be able to quadruple their outturn , they are turning out many new designs, patterns and colours There are some factories which employ 15 to 30 weavers in the heart of Benares city Some weavers work for themselves but many take advances of silk or money from the money lender or Mahajan who buys from him the finished product at a very low rate The Benares Co-operative Society for weavers is now helping the silk weavers good deal Like the weavers of other sister provinces the weavers here are handicapped by want of capital and lack of technical knowledge They live a hand to mouth existence and cannot even think of improving their loom by which the outturn may be increased though the Government have set up nine weaving schools in four of which silk weaving is taught The Salvation Army is also spreading the art of silkworm rearing and weaving in Moradabad and Ludhiana. The Government are encouraging the introduction of Eri silk as a cottage industry and with that object in view one factory has been established in Shajehanpore. For the distribution of eri eggs and for spinning and weaving Messrs. Lister & Co in the Dun and Maharaja Rampal Singh in Partabgarh carried on experiments with mulberry silkworms which proved to be abortive Similar experiments were undertaken by the Government but none met with adequate success.

The Punjab imports about 15 to 20 lakhs of Rupees worth of raw silk from Bokhara, Kashmir, Afgan

Punjab

isthan, Bengal and Karachi. The district reports tell us that she is importing gradually diminishing quanti--

ties of raw silk as the silk manufacturers cannot compete with the cheap goods of Europe. The dyers and weavers of Umballa, Jhang, Montgomery, Dera Ghazi Khan and Gujranwala were in flourishing condition during the Sikh time but now they are handicapped by want of capital and lack of technical knowledge like their compatriots elsewhere. Lister & Co and the Forest Department tried to introduce univoltine silkworms. At present the Director of Agriculture is buying univoltine eggs from France and is wintering them in Simla for distributing them to the rearers in spring and is encouraging the industry by giving medals, prizes and in every possible way. The Irrigation Department is planting mulberry trees along the canals for the benefit of the people, the Agricultural College at Lyallpur is advising people regarding scientific rearing, it is expected that in the sub-montane regions of the Punjab silkworm rearing will be commercially successful. About 10,000 people live by the industry here.

Bombay is the chief importing centre of raw silk and spun silk from China, Japan and Europe. The Bom.ay Presidency, weaving mills cater for Burmah market. The spinning mills of Bombay supply the Punjab, United Provinces and Bengal with spun silk. In Shikarpur (Sindh) silk dyeing is done in considerable quantities. Yeola, Ahmedabad, Poona, Solapur, Surat, Thana, Belgaum, Dharwar, Bijapur, Nasik, Ahmednagar are weaving centres. The Agricultural Department is trying experiments in eri silkworm in Poona and Dharwar. Three nurseries have been established in the Baroda State for mulberry silkworm rearing. The state is also encouraging the rearing of silkworms. Experiments to introduce silkworm rearing were carried on in Khandesh, Poona, Ahmednagar, Dharwar but did not meet with success.

The industry is gradually declining in the Presidency. The weavers attribute this to the competition of cheaper machine-woven goods from Europe and of the "cheaper fabrics dyed in gaudy and fugitive colours with artificial dyes". Raw silk is principally imported from Bengal, Mysore and Bombay, raw silk is exported in a very limited scale but waste silk is exported to Great Britain and France to a consider-

able extent. The export of piece goods to Burmah is fitful and oscillating. Silk weaving is done in Tanjore, Trichinopoly, Chidambaram, North Arcot district, Madras, Conjevaram and Bellary districts. In some districts cotton cloths with silk borders are woven. Tussar cocoons are found in the jungles of Ganjam, Vizagapatam and Chinglepat. The Government tried to introduce silkworm rearing in Sydapet, Coimbatore, Rajmahendry, Vizagapatam and Chinglepat which however proved to be failures. The results seem to show that it is possible to rear silkworm during the colder months. Everything has been left now to private enterprise. The late Mr Tata tried to revive the silk industry of Mysore which possesses an ideal climate for all kinds of silkworms and with that object in view established a farm and a sericultural school in Bangalore which have now been taken up by the Salvation Army who are being helped by the Mysore State. The Agricultural Department is trying experiments in Eri and Mulberry silkworms in Coimbatore. Travancore State has also started one Silk Farm in Trivendrum. It is expected that the industry will be re-established in the genial climate of Southern India. Mysore produces about 12 lakhs of rupees worth of silk annually.

The Tussar silk industry is declining everywhere. India exports about 200,000 lbs of Tussar cocoons annually nearly half of which is being exported from Central India, Central India, Central Provinces. Two Tussar silkworm nurseries have been established in Arsoda and Chanda on the lines laid down by N G Mukherjea for the distribution of good seeds to rearers. There are about 3,000 Tussar workers in the Central Provinces. The weavers and spinners make superior fabrics. Some Tussar cocoons are sold to merchants from Bengal, where they are spun and woven. The weavers import mulberry raw silk from Bengal. Experiments on Eri silkworm rearing are being carried on in Nagpur, Chanda, Arsoda, Bhopal State, Ajmere, Gwalior and Indore States. Indore and Gwalior States are keen on introducing mulberry silkworm rearing as well. Mulberry trees grow naturally in some parts of the country and it is quite possible to rear mulberry silkworms in colder months.

The Yabain tribe of Burmah rears mulberry silkworms and produces cocoons for local consumption.

Burmah

Burmah imports large quantity of silk from Calcutta, Bombay, Madras, China and Japan. The Director of Agriculture is carrying on experiments to rear Eri silkworms in Mandalay.

The Salvation Army have taken up the Farm at Peradeniya where they are rearing mulberry and Eri silkworms. A gentleman in Galb tried to

Ceylon.

introduce univoltine silkworms but he could not succeed.

Experiments were carried on in Khelat by the Government for some years but the work has been stopped temporarily as mulberry leaves are not available.

Beluchisthan

The Maharaja of Kashmir is highly to be congratulated on the rapid expansion of the silk industry and its sure promise of being a permanent one.

Kashmir and Jammu

The State has reserved the monopoly of buying cocoons and has started reeling and weaving factories. It buys univoltine eggs from France and distributes them among the people who are allowed to pluck leaves from State mulberry trees to feed the worms but they can only sell the cocoons to the State officials who deduct the price of eggs and other materials advanced to the people at the time of buying cocoons. The State sericultural overseers go from house to house and advise them regarding up-to-date rearing, planting and pruning mulberry trees etc. Prizes are awarded, advances and all possible encouragements are given to successful rearers.

Science has done more to improve sericulture than probably any other agricultural industry. The scientific investigation of Pasteur, Bassi and other savants saved the decaying industry of Southern Europe from ruin. In this connection we can study with great profit the record of the development of sericulture in European countries. In 1840 in France the average quantity of cocoons obtained from one ounce of eggs was 35 to 40 lbs but now by the sustained Government action it is over 80 lbs and it increases every year;

France.

whereas in India the present yield of cocoons per ounce of eggs is about 50 lbs. and this quantity is gradually decreasing.

There are more than 59 sericultural observatories and laboratories now working in the Kingdom of Italy under the direction and dependence of the station at Padua. Itinerant sericultural experts go from house to house and explain the rearers the up-to-date scientific method of rearing and advise them in various ways. These have given a mighty impulse to the revival of the silk industry. About 200,000 people find their living or additional means of living from silk.

In Hungary the Government supply the rearers with eggs, mulberry trees and seeds, and buy the cocoons from the producers for two-thirds of the market value. The Government have forbidden the sale of eggs, have erected the Institute of Egg Supply and Microscope section of Szegszard which to-day possesses 160 microscopes and examines about 1027 Kilos of eggs, have located an employee in each breeding commune to distribute eggs and educate the rearers, 20 to 25 of these communes are now under the charge of a District Inspector 82 of whom are now grouped in eight sections. At the head of each section is a Chief Inspector with an Assistant Inspector who sees to the proper discharge of their duties. By means of officials the Government supervise 5363 commercial Agrarian schools which are obliged to set apart two-thirds of their land for the cultivation of the mulberry. The Government further maintain 145 special schools for growing mulberry trees.

The present Government have turned their serious attention to this industry and have passed a special law for its encouragement. Concessions of monopoly of given areas are granted to intending builders of filatures, free sites are offered, all rates and taxes are remitted and a 2 Fr bonus is to be paid by the Government for every 2 lbs of raw silk exported for a period of 5 years from the date of the first consignment.

There are about 125 schools in the Kingdom to teach sericulture in some of which sericultural experiments and researches are conducted. Subsidies are granted to rearers and mulberry growers, *circuit* lecturers are employed to spread the scientific knowledge, competitive exhibitions are held, laws have been enacted for the examination of the silkworm eggs. There are about 132 offices for the examination of disease-free eggs. In Yokohama the silk conditioning house which examines all raw silk to be exported, and reports on the qualities to the buyers and sellers, has been established; about 137 Guilds, 4 Associations and 2442 Sericultural Co-operative Societies have been started for the improvement of the industry.

Even in England and America where there is no Sericulture, Silk Associations have been established to safeguard the interests of the dyers, weavers and silk manufacturers.

Sericulture as a rule should be carried on by the farmer as a by-industry and one of the rooms of his dwelling being employed as the rearing room while the female members of his own family attend the worms, it has seldom succeeded when conducted on a large scale. In a country like India where the females generally observe the Purdah and where the standard of living is cheap, the industry is extremely suitable, the margin of profit in this industry being small the people of Europe cannot take to it earnestly.

The motto of every rearer should be the best of everything, best mulberry trees and leaves, best eggs, best worms, best cocoons, best silk. To make the enterprise a success the people must take to it in a businesslike way, they must attend to quality and not to quantity. A woman with her daughter or son can feed the worms produced from an ounce of eggs which if properly looked after, will yield a maund of green cocoons worth about Rs 25 in about 30 days which will be quite sufficient to keep them for 3 or 4 months.

The potentiality of India for this industry is great,—greater indeed than many can imagine. Silkworms thrive best in a

temperature of 70° - 80° F, there is scarcely place in India where this temperature cannot be obtained. In one district this may be easily secured in October, in another in January, while in a third in March but it is very essential that the proper season should be chosen for each district for rearing the worms, an operation which requires expert knowledge. In a new locality sericulture cannot be established in a day, to establish it on a firm footing one must persevere for at least 8 or 10 years.

The silk trade of America, Germany and Great Britain, where silk fabrics only are manufactured but where they cannot produce raw material, cannot be said to be established on a firm basis, the moment the importation of raw material is stopped all their manufacturing skill is undone. Everywhere trade has been decentralized, for many years France has had the monopoly of silk trade. Spinning, home weaving, dyeing developed to a great extent and in 1870 the home supplies of raw silk became insufficient which was imported from Japan, Asia Minor, Italy and the Caucasus to the amount of £10,000,000 but by and by new centres of silk trade grew up at Basel and Zurich, Stavropol in the Caucasus and Crefeld, Italy, Austria, United States and Japan. And what is the result? France to-day imports no less than one-third of the silk fabrics for her home consumption though she exports a large amount of good silk stuffs. The prominent features of the times we live in are that industries of all kinds decentralise and are scattered all over the globe. Belgium and Great Britain have no longer the monopoly of the woollen trade, Germany today exports ten times more woollens than Belgium, Riga and Moscow supply Russia with woollen goods. England is losing ground in her cotton fabrics; while Germany, United States, India and Russia are gaining. Each nation becomes in its turn a manufacturing nation and the time is not far off when even backward India will manufacture nearly everything she is in need of. The first steps of every new enterprise are difficult and seem to be discouraging. Circumstances and accidental causes may check the scattering of industries for sometime but when once any industry has taken firm root it calls into being hundreds of other trades and as soon as the first steps have been made and the first obstacles have been overcome the industrial development goes on at a rapid rate.

Some practical suggestions are now being made —

1 Distribution of disease-free eggs to the rearers, only licensed rearers should be allowed to sell eggs after microscopical examination. The Government must have examination offices in all the big centres of rearing where the Government officers should examine eggs free of charge or they may go from house to house examining the eggs.

2 Encouraging the rearers to rear one-brooded race in October and February and Mysore or some well-established many-brooded hybrid races in other seasons. In order to induce the rearers the eggs must be distributed free at first.

3. In a new locality where there is no sericulture castor silkworm eggs should be first introduced as this race is more hardy.

4 The appointment of circuit lecturers who have expert knowledge of sericulture for advising the people.

5 The holding of competitive sericultural exhibitions in important centres

6. The sanction of subsidies for sericultural classes in village schools, mulberry trees, cocoons, reeled thread, etc.

7 Free distribution of pamphlets in the vernacular of the district for the guidance of rearers

8 The starting of Silk Associations whose object should be — (a) to safeguard the interests of silk manufacturers, (b) to reply to queries regarding silk industry in general, (c) to send members to various exhibitions, (d) to bring together spinners, weavers and traders, (e) to collect and disseminate useful information and statistics regarding silk, (f) to promote technical and commercial knowledge by starting schools for rearing, weaving and dyeing in important silk centres like Bhagalpore, Berhampore, Benares, Ahmedabad, Malda, Gurudaspur, Nagpur, Madras, Bangalore, etc., (g) to induce the manufacturers and retail traders to demonstrate to the people who are carried away by gaudy colours that Indian silk goods have got their own good points specially from the point

of view of price and durability, (*h*) to secure just and equable relations between the silk merchants and the rearers, (*i*) to expand the growth of industrial art, (*j*) to establish Libraries and museums on sericulture in silk centres, (*k*) to induce Government to take up sericulture in Khas Mahals as Model Zamindar and in Court of Wardsestates thus setting examples to others, (*l*) to impress on manufacturers the advantages of Indian as compared with other silks and to be particular about the quality of the silk exported until a silk conditioning house is established in Calcutta or Bombay by the Government which would stop the exportation of bad silk, (*m*) to establish co-operative societies and guilds among silk-growers and manufacturers.

9 The establishment of a central sericultural institute with branches in all the important places of silk rearing.

The Study of Economics in India.

BY

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There is a traditional way of speaking about Indian thought and the Indian mind as if they had never really been at home except in the rarefied atmosphere of metaphysics and abstract philosophy, and had never shown either aptitude for, or real interest in, the study of anything so gross and palpable as the wealth of nations or the conditions of material well-being. This is a one-sided view which is by no means borne out by a study of Indian literature. In the Sanskrit writings which best reflect the culture and civilization of ancient India, material interests and the material side of life are not ignored or neglected; and there are grounds for stating that in this very city of Patna or—to give it its old name ‘Pataliputra’—the study of Economics was recognized more than twenty centuries ago as one of the indispensable branches of a liberal education. According to that amazingly instructive work the Arthasastra of Chanakya, the science known as Vârtâ, of which agriculture cattle-breeding and trade were the main divisions, took rank as one of the four principal sciences; and students invested with the sacred thread were directed to study it under Government superintendents who were specialists in the subject.

I do not propose to treat my subject to-day from an antiquarian standpoint, or make any attempt to trace the development of economic studies in India from the time of King Chandra Gupta to the reign of King George. We are concerned here not with the learning of the remote past, but with problems of the present and immediate future. But it is of some interest to note at the outset that the growth of interest in economic subjects which is so remarkable a feature in

India of to-day, is not a wholly new or unheard—of phenomenon in this country, or one that ought to be regarded as in any sense alien to the natural tendencies of the Indian mind.

It is obvious enough however, that the actual economic conditions of to-day, (in India as in the rest of the world), and also the scope and character of modern economic theory, are widely different from anything with which Chanakya and his contemporaries were acquainted. Within the last hundred years (to go no further back) both the subject of study and the scientific standpoint from which it is treated have been radically transformed; and at the present moment the process of transformation appears to be proceeding with undiminished—or perhaps even increasing—rapidity. The conception of India as passing through a stage of economic transition has been made familiar to us by writers like the late Mr. Justice Ranade and Sir Theodore Morison; and this process, even though we may not take precisely the same view, or attach quite the same importance to it as either of these authorities, must be accepted as an outstanding fact. And it is a fact which gives to the study of Economics in this country a special interest, and at the same time makes it specially difficult.

I. DIFFICULTIES TO BE FACED.

That Economics in many aspects (and specially in those which bear most closely upon practice) is a difficult study must be admitted; and it must also be admitted that there are peculiar difficulties in the application of current economic theories to Indian conditions. Both the difficulty and the importance of the study should make us very cautious how we handle it. There is no science which offers fairer promises of practical utility; but there is also perhaps none which contains more dangerous pitfalls for the hasty or the unwary. In the name of political economy a deplorable amount of non-sense has sometimes been talked. In that admirable compendium of pedagogic wisdom the “Hitopadesa”, there is a sloka in which

“twig-gathering knowledge” (pallavagrâhi pândityam) is described as one of the three great curses of human existence. And there is probably no important branch of study in which knowledge of this sort (knowledge *i. e.*, which consists in a superficial smattering and has neither root nor stem) is either more easily come by, or more fatal in its capacity to stultify and mislead.

This perhaps sounds as if it might lead up to a solemn warning that so perilous a science should be left severely alone; but this is very far from the conclusion that I wish to draw. The fact that a little knowledge of economics may be a dangerous thing does not justify the inference that complete ignorance of it is a safe and desirable condition of mind. The inference rather is that it should be studied seriously and with such thoroughness as our faculties permit; and that we should recognize at the outset that the subject is a difficult and not a simple one. The obscurity and complexity of the subject and the delusions regarding it which arise from imperfect knowledge and shallow reasoning are the strongest possible reasons for giving not less but more application and intelligence to its study.

There are certain sources of error common to this and other cognate branches of knowledge which may be classified broadly under two main heads — (1) the inherent complexity of the facts, and (2) the subjection of the human mind to bias and prepossessions in connection with them.

(1) *Complexity of Facts* .—

There is something almost inconceivable in the multiplicity of the various conditions and processes which in a modern community enter into and affect the production and consumption of wealth. Take, *e. g.*, a single individual, belonging to any class whatever—from raja to rayat, or from millionaire to crossing-sweeper; and consider his economic activities—his actions as a getter and spender of wealth—during a single month of his life. Try to estimate all the various causes which determine

what he earns or receives, and how he spends it. You will find yourself embarked on an inconceivably wide and various, and apparently quite endless course of enquiry. He is, to begin with, an individual person, possessed of a character and of capabilities which are partly the common possession of the class or social group to which he belongs. To give a complete account from an economic standpoint of all that he does, and the reasons why he does it, would involve not only a history of his own life education and opportunities, with researches into his parentage and ancestry, but also an exhaustive analysis of the customs and organization of the society of which he is a member. Then again there is a multitude of circumstances external to, and at first sight vastly remote from, the man himself, which may yet in subtle and far-reaching ways affect his position and outlook in the economic world. Suppose, *e. g.*, that he is either a buyer or seller of agricultural produce in Behar. The amount which he has to give or is able to obtain in exchange for it may be affected by climatic conditions in distant parts of India, or even possibly in Russia or America. Similarly the price which he has to pay for the necessities of life, such as cotton cloth, or kerosene oil, may be influenced by a party crisis in England or a change in the law affecting business corporations in the United States. At whatever point we try to take hold of the economic situation, we find ourselves dealing with the same complex entanglement of shifting and interacting forces. To start with a few simple propositions, in order to arrive by simple and easy chains of reasoning at plausible and easily understood conclusions, and to accept such conclusions as true without further test or verification, is a progress obviously inapplicable to this kind of subject-matter.

Considerations of this nature have sometimes led to a summary rejection of the methods and doctrines associated with the "old", or "orthodox" school of economists. Such an attitude to my mind is based on a seriously mistaken view of the nature and value of their work. That is a point to which I shall return shortly. At present I merely wish to illustrate the common fallacy which consists in falsely simplifying a

concrete problem by neglecting relevant conditions, and assuming a uniformity and absence of complicating circumstances which never in fact exists. So far as the older economists really did treat concrete problems in this way, they fell into one variety of the general type of erroneous reasoning which I am considering. But it is necessary to observe that there are other varieties of the same type of error, from which the arguments of their critics themselves have not always been free. Reasoning of an unduly narrow and abstract theoretical character is one way of evading difficulties ; loose and vague reasoning of a "historical" kind is another way that is even more likely to mislead. Argument of the latter sort is often just as "abstract" as the former, in that it takes account only of some small fragment of relevant conditions and antecedents ; while it gains less than nothing from the fact that it is not so severely logical, and rests upon assumptions which it is less easy to detach and examine. Because it can be shown that a short cut in one direction does not lead to economic truth, it does not follow that a shortcut in the opposite direction does. Yet one sometimes comes across arguments of a popular nature, in favour, *e g.*, of protective import duties, or other forms of state encouragement of industries, which are rather of this type. The theory of *Laissez Faire*, it is said, is exploded ; the abstract reasonings upon which it was based have broken down ; and the principle of free and unrestricted competition, with as few impediments to exchange as possible, can no longer be upheld as a universally valid idea. All this may be true enough ; but from such negative premises only negative conclusions can be drawn. With regard to any particular proposal for restricting trade, it can fairly be argued that it is not to be condemned at sight out of deference to the said exploded theory. The question of its expediency is in fact an open one, to be argued out with reference to a given time and place, and to all the conditions which happen to be relevant. But the line of argument actually adopted is often one which proceeds practically direct from a denial of the truth of the *Laissez Faire* doctrine as a univer-

sally valid theory to the affirmation of the expediency, in some particular time and country, either of a general policy of protection or of certain special restrictions in favour of particular branches of industry. The conclusion may or may not be true ; but it certainly is not proved to be so by an argument of that type.

(2) *Liability to Bias.*

The hasty reasoner of the " historical " or " national " school is no less open to the charge of ignoring the complexity of facts than the abstract doctrinaire thinker of the older type. But in another respect his reasonings are even more liable to error. They are more apt to be coloured and perverted by the prepossessions and real or imagined interests of the individual reasoner (2) This brings me to the second of the sources of error of which I spoke. It is evident that if we are to have a reasonable chance of reaching true conclusions regarding economic problems, we ought to study those problems with a single eye to the truth, and should approach them in a disinterested and severely scientific spirit. That is easily seen, and easily said ; but it is a counsel which it is peculiarly difficult to act upon with steady consistency.

In the first place the chief motive which attracts most of us to the study is not a purely intellectual thirst for knowledge. It is an interest of a warmer and more human kind in conditions which are accountable for the happiness or misery of large masses of our fellow-beings, and in the forces which promote or defeat human progress. We cannot be detached or indifferent spectators of these conditions and forces. We see two competing sets of interests in opposition ; and our sympathies are with the one and against the other. There are some conclusions which we desire ardently to see established ; there are others which we should regard with aversion and dislike. We are apt to set ourselves to establish the former and refute the latter ; and incidentally to manufacture theories whose hold on our belief is determined by the interest which we have in believing them,

and may be wholly disproportionate to the strength of their foundations in logic and experience

It has to be recognized too that in the actual world economic questions cannot be wholly isolated, or enclosed in a ring-fence which will exclude every consideration of a non-economic character. As soon as we ask for the full explanation of an economic fact, or try to follow out in practice lessons drawn from some economic principle, we are forced to realize that there is a host of facts and principles of other kinds which refuse to be left out of account. Economic questions constantly turn out to be inseparably bound up with questions of an ethical, social, political or even religious character. And these other considerations not only complicate the matter hugely when it comes to a question of facts or of practical issues; they sometimes make it appear unnatural or inhuman to adopt the strictly neutral attitude of the scientific enquirer. When we endeavour to reason correctly in such cases we are apt to find ourselves in as difficult and ambiguous a position as that of the judicial officer who made it his aim "never to swerve either to partiality on the one side, or to impartiality on the other".

The more determined we are to avoid the errors of abstract reasoning, and to study our subject in the concrete and in a practical spirit, the more difficult it becomes for us to escape the influence of various kinds of bias and interest. If we abjure the region of abstract principles and decide to admit every kind of relevant consideration, we merely pass from Scylla to Charybdis. Our reasoning in losing its narrowness is prone to lose also all its logical coherence and certainty. It no longer has any fixed starting point, clear limits or definite guiding principle. Such guidance as is forthcoming is almost inevitably the guidance of inclination or prejudice. There may possibly be a gain in the colour and picturesqueness and facility of our studies, but there is almost certain to be a loss in rational sequence and in the logical validity of our inferences.

That bias and prejudices of many kinds are a preponderant influence in the formation of popular opinion on economic matters, is perhaps too obvious to be questioned. That the bias is in many cases creditable to the heart and character of those who are misguided by it, may be an extenuating circumstance, but is hardly a relevant defence. Strong sentiments or interests are almost equally likely to mislead, whatever may be their moral quality. The dominant bias may be selfish in one man's mind, patriotic in another's, and humanitarian in that of a third; and all three may be equally incompatible with clear or scientific thinking.

II. METHODS OF STUDY

In the complexity of the subject-matter, and the liability of the mind to bias in regard to it, we thus have two great standing difficulties by which the study of Economics must always be in greater or less degree obstructed. They are impediments whose obstructive influence may be minimized, but can hardly be evaded altogether; and the first step which is necessary in order to minimize it is to recognize fully and clearly the fact of their existence. The next is to devise a course and methods of study which may enable the mind to surmount them as far as possible.

I need hardly discuss here the preliminary training and mental equipment that are required. Not much is needed in the way of preliminary knowledge beyond a moderately extensive acquaintance with history and geography, and the course of current affairs; the only indispensable intellectual qualification is a habit (unfortunately somewhat rare) of thoroughly assimilating all knowledge that enters the mind. The opposite habit (unhappily too common) of mechanically repeating phrases and formulas with the minimum of attention to their significance, is a disqualification which is often enough to render all study a sheer futility.

(3) *Classical and Historical School.*

Taking for granted, then, the necessary minimum of general knowledge and trained reasoning power, I want now to consider what is the best method of overcoming the difficulties of economic study, and obtaining the highest advantages from it. In order to decide this, it is necessary to return for a moment to the well-worn topic of the controversy between the so-called Classical and the Historical School. Are we to employ both or only one of the two rival types of reasoning? There is the abstract deductive method on the one side, and the concrete inductive method on the other. We have seen that each has its own shortcomings; but their rival claims require a closer examination. If we are to employ both methods, how is our labour to be divided between them? And how are the diverse results to which they may lead us to be brought together and harmonized, and fitted into a coherent scheme of knowledge?

These are questions which have to be studied not in an abstract and general way, but with reference to the peculiar economic conditions and circumstances of this country. To answer them with any fulness is quite beyond the scope of a paper like this; and I shall not attempt to do more than indicate in a brief and cursory manner some of the main considerations which have a bearing on them.

There is one point at least which may be decided off-hand. It may be taken for granted that the abstract method is not the only one that should be employed. Our study must at least in part be of a historical and inductive character. I do not know whether this has ever been disputed. It is certainly not a matter of dispute at the present day. Whether the abstract method should be employed at all, and not discarded as obsolete and valueless, is matter on which there is slightly more room for doubt. There are two sets of arguments which may be brought forward to discredit it.

(1) *General Objections to Deductive Method.*

There is first of all the general argument to which I have already referred that no chain of abstract reasoning can possibly be adequate to the variety and complexity of economic facts. The study of the conditions under which wealth is produced and consumed should, it may be said, be a study of actual fact ; and where the actual facts are so complicated, so subject to change, and so various in their concrete character, no set of abstract propositions deduced from a few simple principles can possibly furnish a sufficient account of them. In order to get at the truth we must recognize that man is a complex and not a simple creature, and that men are not all alike, but widely different in character, habits and motives ; and instead of starting like the old economists with assumptions which contradict this, and imply a simplicity and uniformity which nowhere exists, we should begin with a patient examination of the actual facts in all their complexity. A course of study following these lines is essentially historical and inductive. As such it has the advantage of dealing with men as they are actually found to exist, instead of with a purely imaginary race of beings, of the type represented by " the Economic Man "

If this argument is merely directed to the conclusion that the deductive method is not the only method of economic study, it may be accepted at once. As a plea for the study of economic history, or for a recognition of the vital connection which must always exist between the economic and other aspects of social life, it is wholly sound. But as an attempt to establish the more trenchant and extreme conclusion that there is no place at all for deduction as abstract reasoning, and that the historical is the sole valid method it is altogether fallacious.

The obvious reply is that the very consideration put forward as an objection to the abstract study of economics (*viz.* the extreme complexity of the subject-matter) is precisely the reason which makes such an abstract study necessary and inevitable. If economics were to be treated as a wholly concrete

study (*i. e.* if all the facts relevant to every economic question were to be taken into account) it would be wholly and patently unmanageable. Economic problems would have neither beginning nor end, and would spread themselves out over the whole field of human knowledge. But the moment we give up the attempt to consider all the facts, we are committed to a process of abstraction ; and the length to which we carry this process becomes a matter to be determined by considerations of practicability and convenience. By abstracting and simplifying we may appear to be losing touch with the actual world , but it is only through abstraction and simplification that a scientific study of the actual world is possible. In adopting this course we are merely following the same course as other sciences. It is as great a mistake to condemn the abstract study of economics because the Economic Man does not exist, as it would be to condemn, *e g.*, the study of plane geometry on the ground that there are no triangles in nature.

The economist invents an abstract and simplified form of human nature for the same reason that the geometrician invents an abstract and simplified space. He wishes to study human nature in a certain aspect ; and in order to do so proceeds to isolate this particular aspect from all others. In this aspect he finds that among the numberless causes which affect and determine human action there are certain motives (such as self-interest) and certain limiting conditions (such as the law of diminishing returns from land), which are plainly of wide and general importance. By a further abstraction he isolates these motives and conditions ; and by assuming or postulating that these and no others are in operation he is enabled to reach conclusions which may have at any rate a hypothetical and provisional truth, even though they may not be directly applicable to the actual world. If he reasons correctly, they will be true on the hypothesis from which he starts ; but their practical value will depend on the degree in which this hypothesis agrees or is at variance, with actual facts. He assumes that men always sell at the highest, and buy at the lowest, price that can

be obtained ; and on this assumption he is able to draw inferences regarding the causes which determine prices and trade-movements. Such inferences will be true in regard to any actual market just so far as the initial assumption is realized.

(2) *Special Objections in case of India*

At this point will naturally be raised the second set of objections which have to be considered. It may be contended that in regard to India the initial assumptions of the abstract economist are so far from being realized that for all practical purposes they may be dismissed as wholly irrelevant and worthless. And an appeal on this point may be made to very high authorities, both as regards the inherent limitations of the abstract type of economic doctrine, and its special inapplicability in the case of India. Thus it has been maintained by Walter Bagehot that the science of Political Economy as treated by the older English economists is only applicable to communities of a fully developed economic type. The causes which it recognizes as affecting wealth are the main and principal cause only "in a single kind of society—a society of grown-up competitive commerce, such as we have in England". "It is only in such societies that the other and counteracting forces can be set together under the minor head of 'friction'; 'and' the greatest confusion arises if you try to fit on *uneconomic* societies the theories only true of, and proved as to, economic ones." India is certainly not as a whole a country of grown-up competitive commerce. Its industrial organization is still for the most part of a primitive type ; and we are often told that it is a country in which competition is almost non-existent and 'custom reigns supreme'. And we are further confronted with Mr. Ranade's contention in his well-known essay on "Indian Political Economy" that the assumptions of the older economists are in India "chiefly conspicuous by their absence". "With us an average individual man is to a large extent the very antipodes of the Economical Man. The Family and the Caste are more powerful than the Individual in determining his position in life. . . . There is neither the desire nor the aptitude for free and unlimited

competition, except within certain predetermined grooves or groups. Custom and State Regulation are far more powerful than Competition, and Status more decisive in its influence than Contract. Neither Capital nor Labour is mobile and enterprising and intelligent enough to shift from place to place. Wages and Profits are fixed and not elastic and responsive to change of circumstance . . . In a Society so constituted the tendencies assumed as axiomatic are not only inoperative, but are actually deflected from their proper direction."

It would be idle to deny that considerations of this nature derive great weight from reason and experience as well as from authority. Does it follow from them that the older economic theories are wholly inapplicable to India, and that it is mere waste of time and labour for Indian students to master them in the hope of throwing any light upon the special economic problems of their own country? My own opinion is emphatically opposed to any inference of this kind, and I believe that if Mr. Ranade were now alive he would recognize that a two-fold change has brought about a much closer relation than existed in his time between economic theory as developed in Europe and the actual economic conditions which exist in India. The older type of theory has been developed by its later adherents into something more flexible and less dogmatic; and at the same time new conditions have begun to modernize India, and to soften down the old contrasts between East and West.

Possible Methods for India.

Looking at the question as a practical one regarding the lines along which economic study ought to be guided in India, it is clear that there are only three possible courses.

(1) We may assume that the case of India is so anomalous that none of the ordinary postulates are sufficiently applicable to be of any value; and we may consequently decide to confine ourselves to methods of a rigorously inductive character. We must content ourselves in this case with the

task of accumulating and classifying facts, and cautiously framing such general theories as these facts may suggest or authorize. All that we can do in fact is to gather materials for a special or "national" science of economics as applied to India, which the Indian economists of the future may be expected to construct. I believe that in many departments of our study this view is correct; and it is probably on these lines that there is at present most scope for profitable investigations. But I am far from admitting that there is no fruitful work to be done on other lines. or even that work of this kind would not be better done by students who are conversant with methods and results of a different type.

(2) It may be acknowledged that in India no less than in Europe some means of simplifying our problems must be found, if we aim at finding any general clue to their complexities and arriving at anything like a clear and coherent system of knowledge. But it may be held that the principles or postulates employed for this purpose should be indigenous and not imported. They should be evolved from a general consideration of Indian and not European conditions. This is as much as to say that while one type of economic theory holds good in the West, another and broadly different type is required for the East. It is a large and bold proposition; but it can hardly be accepted off-hand. It can hardly in fact be entertained as credible until at least some plausible sketch is offered showing the character and rough outlines of the suggested system, and indicating some at any rate of the new principles and postulates which it is proposed to employ. So far as I know, however, no such suggestions have ever been put forward and the conception of wholly new and specially Indian (or specially Oriental) branch of economic theory cannot be accepted as an ideal which there is any ground to suspect of being realizable.

(3) The third course left open to us is to avail ourselves so far as we may of the general theories of European economists after testing carefully their applicability to Indian conditions. It

is no longer possible for any one to imagine that economic theory forms a compact body of doctrine, which is true everywhere and at all times. But the range and degree of its validity in regard to any particular time or place is at any rate a matter open to enquiry; and a dogmatic denial of its relevance to India is no more justified than dogmatic affirmation.

It is evident that the questions raised are too many and various to be disposed of in any wholesale fashion. Economic theory has many branches and departments; and Indian commerce and industries are of extraordinarily diverse types. The bearing of European theory upon different types of Indian practice offers not one but a multitude of problems; and between many of them there is so little obvious or direct connection that each (provisionally at any rate) has to be treated separately in the light of its own special conditions. Thus in regard *e.g.* to the Calcutta money market or the transactions of a great exporting firm, the ordinary assumptions of abstract economics may be taken as very nearly correct, but in considering the grain market of an Indian village, there are so many allowances to be made, and so many qualifying circumstances to be taken into account that they appear to have comparatively little relevance, and if applied incautiously may lead to wholly mistaken inferences. It may be said, perhaps, that the few big commercial centres which exist in India are really imported fragments of Europe, and as such are a mere anomaly in India, and not an organic part of the properly Indian economic system. There is some truth in this; but it is easily overstated. The highly organized system of commerce and manufactures which has established itself in these centres is doubtless exotic and not an indigenous phenomenon. But many of the forces which make modern India what it is, and more perhaps of those which are preparing India's future, are also exotic and not indigenous in their origin. Though modern commercial methods may be a new thing in India, and as yet restricted to a narrow area, it is impossible to doubt either the immense possibilities of expansion which await them in the near future, or the effect which they

have already produced through thousands of channels upon the whole economic life of the country. The influence of modern methods and ideas is far wider than the sphere in which they are directly and visibly operative. Railways, schools, and post offices are changing the outlook of large classes of the population; and the traditional isolation of the Indian village is being slowly broken down.

Examples of Abstract Theory applied to India.

But without entering upon the large and perhaps rather nebulous field of discussion which these considerations suggest, it is easy to point to one topic, recently of burning interest, on which the applicability of abstract economic theory to Indian conditions has been convincingly demonstrated. It is hardly possible to study the history of the rupee, and follow the prolonged discussions which led up to the adoption by the Indian Government of its present currency system, without being struck by the prominence of purely theoretic arguments and considerations, and also by the degree in which these have been justified by the course of events. They have been employed with remarkable success both to explain and make intelligible the causes of an extremely complicated set of circumstances, and also to afford practical guidance in a difficult situation. Interesting testimony on both these points has lately been offered by Sir David Barbour in his recent book "The Standard of Value". The proposals made by him in 1893 as Indian Finance Minister for the transfer of the Indian currency system from a silver to a gold standard, were based, he tells us, on his belief in the soundness of the Quantity Theory of Money. And he expresses the opinion that no stronger proof could be conceived of the essential soundness of that theory than is afforded by Indian experience of the working of the Gold Exchange Standard. The whole of India's recent currency history is full of most instructive illustrations of the application of theory to practice; and it need hardly be insisted that some study of abstract theory is necessary in order to understand it.

To pass on to a more dubious instance let us take the Ricardian theory of rent. It might seem at first sight that here at any rate we have a doctrine wholly out of relation to Indian conditions. The rents which in India are actually paid by tenants to their landlords vary between wide extremes according to the form of tenure, and are largely governed either by custom or by legislation. They seem to have little connection with "economic rent", or the rental value which the land would have under a system of unrestricted competition between cultivators. Similarly customary wages seem to be independent of causes affecting the demand and supply of labour. It has been shown however by Sir Theodore Morison that in such cases there is often a closer relation than appears on the surface between the real amount paid and the rate of payment which economic theory would suggest as probable. Even where custom appears to be, and is accepted as, the sole factor in determining payments, a more searching enquiry often shows that competition plays an unseen but real and important part. If long periods are taken, customs themselves may be found to alter under the pressure of competitive forces. New customs arise, and old ones die out, or are modified in response to changes in economic conditions. Take, for example, the Metayer or (to give it its local name) Bhaoli system of land tenure, which is common in this neighbourhood. On this system rent is on the face of it entirely fixed by custom at an unalterable share of the gross produce. But when the rent paid under this system falls much below the rental value which the land would have under competitive conditions, there is a common tendency, in defiance of custom or law, to augment the amount actually paid by extra charges in the form of one or other of the various species of "abwâb". The customary rent remains nominally unaltered; but by a proceeding of the nature of a legal fiction the real or virtual rent is pushed up in conformity with changed competitive conditions. In this and other instances it is far from true that there is any complete discrepancy between the abstractions of theory and the concrete conditions of Indian experience. On the contrary it has been shown by Marshall

and other economists that they can be made mutually illuminative. Indian facts become more intelligible in the light of abstract principles ; and these principles themselves often reveal possibilities of development and extension as well as limitations, when the attempt is made to apply them to a new and apparently alien set of facts

Economic theory in Education.

Perhaps enough has been said to shew that even from a " practical " standpoint the old-fashioned type of economic theory has a relevance to Indian conditions which no one who wishes to understand them can afford to neglect. There is however one kind of practical standpoint—not always recognized as such—from which I may be allowed to say a few words, as it is the standpoint from which I have to take my own personal bearings. I mean the pedagogic or educational standpoint. As part of a course of education, I believe that there are few studies which have so high a value for purposes of mental training. It is at once a stimulus and a discipline for the mind. Merely to follow the deductions of " the old school ", and to test one's understanding of them by applying them to real or imaginary cases, is an exercise in applied logic, which not only strengthens the reasoning power, but also (which is perhaps an even more important matter) tends to create a habit of regarding the subject under discussion from the point of view of reason and not of prejudice or party feeling. If studied on right lines, and with a reasonable degree of thoroughness, it is a subject which has the cardinal merit of compelling the mind to active exertion, and dragging it out of the purely receptive attitude into which aspirants after examination successes are almost always prone to sink.

It is not necessary, I think, that the study of theory should be carried to as high a point of refinement and elaboration as is reached *e. g.* in the writings of Winser and other economists of the Austrian school. What is rather wanted is thorough understanding and grasp of certain broad elementary principles,

including a mastery of the processes of inference by which they have been established, and of their basis in reason and experience. Apart from the question I have been discussing of the applicability of such principles to Indian affairs, there can be no doubt that a clear understanding of them is in any case useful as a safeguard against certain kinds of fallacious and confused reasoning, which are by no means rare among amateur economists, and are as easily perpetrated in India as in Europe. Old errors associated with the Mercantilist or the Physiocratic standpoint are continually being revived in subtle forms, and often have a plausibility that is likely to deceive any one who has never tested their theoretic foundations or followed out in a thorough-going way the arguments by which they have been long ago refuted.

Study of Facts.

I have spoken at some length on the deductive side of economic study, because I think that at present there is a tendency to neglect it unduly. But there are inductive branches and methods of study which it would be even more fatal to neglect. A clear grasp of the main principles established by abstract theory is not the whole or by any means the major part of what is required of the Indian economic student. It is merely a highly serviceable (and for some purposes indispensable) part of his preliminary equipment. The more interesting and much more important part of the work which awaits him is work of a newer and more adventurous kind. There is a vast area of practically untrodden ground to be explored and mapped, and to be brought by slow degrees within the domain of ordered knowledge.

In this department of our study, theory must for the present, as it seems to me, play a strictly subordinate part. Whatever value the study of abstract principles may have as an introduction and aid to the study of facts, it cannot be denied that (especially in India) there is as yet a considerable gap between the two; and while accepting all the suggestions and

guidance that theory may be able to offer, it is necessary to avoid being too much preoccupied with theoretic considerations. There is less danger of our judgment being warped by theoretic-
al than by practical or sentimental prepossessions, but it is a danger which sometimes has a real existence. It is occasionally necessary to remind ourselves that in the end theories have to be fitted to facts, and not facts to theories. For this reason, and in order to make sure of keeping an open mind, it is often best to put theory for a time entirely on one side, and to study mere facts on detached and independent lines. So long as one is merely collecting materials and gathering evidence this is doubtless the right attitude. Later on there is a time for testing theories by enquiring if they are applicable to the facts which have thus been independently ascertained.

At the same time there is little doubt that through the whole process of "realistic" study the theoretically trained mind has certain advantages, which more than counterbalance the danger of doctrinarism. It is less prone to the unconscious type of fallacious theorizing, and the subtle perversion of facts that commonly ensues from it. And it is also more awake to the observation of antecedents and consequents that are not on the surface noteworthy, but may be important as links in a causal sequence.

III AIMS AND POSSIBILITIES IN INDIA.

It would however be a piece of gross academic presumption to imagine that a theoretic training is absolutely indispensable for the accomplishment of any useful work in this field. Any moderately intelligent person, with an open mind and a habit of conscientiously accurate observation and statement, is qualified to render valuable service in extending the common stock of economic knowledge. Merely to observe and record facts in a trustworthy manner is doubtless a less easy task than it sounds; but it may be carried out successfully without undergoing a special course of training, or qualifying oneself to be called an expert.

A suggested Programme.

What is wanted above all in India is systematic cooperation between the economic student and the man of practical experience. As far as concerns the special study of Indian conditions, the work to be done falls broadly under three heads; and under two of these experience and working knowledge are of decidedly more importance than theoretic training.

(1) There is first the task of collecting and arranging facts. This appears to me to be at present the foremost need, and to offer widest field for useful labour. It is true that masses of historical and statistical material already exist in a more or less systematized condition. In Settlement Reports, Gazetteers, Reports of Commissions, and of Government Enquiries on special subjects, stores of varied information and evidence are to be found. But the knowledge there gathered has in the main been collected for special purposes, and is presented from special points of view. The common element in it all is that it is acquired through the administrative machinery of Government, and primarily with a view to administrative requirements. This does not necessarily lessen its value; in fact in some respects it undoubtedly enhances it. Government obviously has means of obtaining information on a wide scale, which are not available for private individuals, and there is the strongest motive for accuracy when the information obtained is to be made the basis of administrative policy. But on the other hand there are inevitably gaps and deficiencies which can only be filled by systematic private investigations. The material supplied in Blue Books is a part, and an enormously valuable part of the evidence which private enquirers have to study; but in order to build up a sound and comprehensive body of knowledge, a great deal of additional material is needed, which must be obtained by investigations of a more searching and detailed kind. All the knowledge to be acquired must ultimately be based upon particular facts; and the particular facts which are of overwhelming importance in the economy of India are facts affecting the lives and circumstances of men living in villages.

Government is the only agency which can ascertain these facts over a very large area; but the nature of the machinery through which wide-reaching investigations of this kind must be made, imposes certain limitations, both in regard to the questions that can be answered, and also in many instances in regard to the value of the answers that can be obtained. The ultimate source and authority from which Government derives a large part of its supplies of local information, is, I suppose, the village chowkidar. Information so derived, even when revised and supplemented by intelligent guess-work on the part of higher authorities, is likely to be in some respects defective. What is required generally, in order to supplement information of the type supplied by Government, is study of an intensive kind, restricted to a narrow area, and entering thoroughly into concrete details.

There is one circumstance which in India makes it absolutely necessary that enquiries should be carried out on these lines, if any real progress is to be made in our knowledge of Indian economics. This circumstance is the amazing variety of local conditions. There is no country about which it is more dangerous to generalize. This is obvious enough about India as a whole; but it is also true regarding each province, and often regarding minor divisions within each province. As regards *e. g.* this particular part of India, the fraction of a province that goes under the name of Behar, there is a sufficient diversity of conditions in the Patna Division alone to offer a wide and varied field of "realistic" study.

We have in the Patna College an association of students known as the "Chanakya Society", which exists for the purpose of collecting and discussing local evidence regarding economic conditions. Its work may be taken as an illustration of the type of study I am now advocating. One of its members will, I understand, read a paper on the work of the society before this Conference. This will perhaps enable members of the Conference to judge of the utility of studies carried on along these lines; and will also, I hope, elicit valuable criticism and advice regarding the particular methods which the society

is following. I am now however only referring to it in order to illustrate what I have just said about the diversity of local conditions. Practically all the members of the society are Beharis, and most of them, I think, belong to this division; but one of the most instructive features of its proceedings is the variety of the conditions with which its members are acquainted. At the earlier meetings of the society whenever any general discussion arose concerning such questions as conditions of land tenure, agricultural customs, or rates and mode of payment of wages, it was the usual thing for its members to begin to contradict one another. Each spoke from his own personal experience; and the conditions of which they had knowledge were often totally at variance. The inference is that detailed local evidence must be collected in large quantities before it is possible to make any profitable attempt at generalization even within the limits of an apparently homogeneous fraction of a province such as South Behar.

(2) Under the second head comes the analytical and comparative study of such evidence as has been accumulated. This is work for which a theoretical training in economics, and some study of European as well as Indian conditions is a necessary qualification. I am inclined, as I have said, to regard this work as on the whole less important at present than that which comes under the first head. It will become more important as the available body of evidence and material becomes larger. It is impossible, however, to postpone it altogether. The two processes of collecting and analysing facts must go on together, and can never be wholly separated. By analysis and comparison we are enabled not only to generalize from evidence already accumulated, but also to learn in what directions further evidence is to be sought, what classes of facts should be collected, and what questions should be asked. Again while it may be allowed that the study of Indian economics as a whole is not yet ripe for systematization or for theorizing on a comprehensive scale, it must also be recognized that there are many branches of the study in which the theory and experience

of Europe have already been successfully employed to throw light upon Indian problems. To establish this, it is only necessary to refer again to Mr. Ranade's essays and the works of Sir T. Morison, or with even more relevance to Dr. Marshall's evidence before the last Indian Currency Committee.

(3) Thirdly and lastly, we come to the study of directly practical issues. In most of our minds probably this is the end to which the two former branches of study are subordinate. The mere acquisition of knowledge would not attract us unless we believed that it could be made to serve practical ends,—to remedy evils, and be instrumental towards progress and improvement. There are some no doubt who will tell us that this belief is a mere illusion,—a vain dream of the academic mind,—and that for practical work not theory but practical experience and capacity are wanted. Examples will be adduced of enterprisers that have broken down and reforms that have proved fruitless. That is what always happens, we may be told, to the schemes of theories and visionaries; it is only the practical men who put things through, and they do not trouble themselves about theory. Fortunately the object can be met with notable examples to the contrary. The remarkable success for instance of the Cooperative Credit movement both in Europe and in India may well be regarded as the realization of a vision. No doubt it also exemplifies the necessity of practical insight and experience in addition to, though not as a substitute for, clear thinking and wise knowledge. This much may be granted to the objector,—that theoretical knowledge by itself is not a sufficient equipment for the work of practical reform,—and also that bad theorizing may be much worse than none. But it is unnecessary to argue seriously against the view that theory as such is of no practical use whatever. No one not even the most narrowly “practical” among us can help theorising to some extent; and if we have to theorize at all it is plain that the more sufficiently we do it the better. All sound practice must, whether consciously or not, be based upon, or at least in accordance with true theory; and the practical man who has a

clear grasp of true theory has, so far as that goes, an indubitable advantage over one who works unconsciously or by rule of thumb. It is only by a patient and thorough-going course of study, in which the teaching of theory and experience are combined, that results of any practical value are likely to be reached, but the outcome of such a study should be the attainment of a standpoint that is practical in the best and widest sense. There are two opposite forms of error that it may help us to avoid. One is the error of the "hard-headed practical man" to whom all obstacles to improvement are insuperable, and everything except the ordinary and customary way of doing things is outside the range of practical politics. The other is the more pleasing and more insidious fallacy that obstacles of any kind are non-existent or negligible, and that there are easy ways,—such as taking the swadeshi vow or passing resolutions at public meetings,—by which a new economic world can be brought into existence. One form of the latter type of delusion is a belief in the practical efficacy of uninstructed enthusiasm, another is faith in the economic omnipotence of Government. Instruction in economics is a useful safeguard against both, if it gives us some insight into the complex forces by which economic issues are decided, and enables us "to see the unseen" and to realize that the most obvious shortcut is not generally the way that should be chosen.

It would take me too long to give even a moderately comprehensive list of the practical problems which await solution in the India of to-day. There are one or two problems of high importance, such as the problem of Famine Relief, and perhaps also the Currency Question, which may be said to have been solved already (so far as the main principles involved are concerned) by the efforts and experience of the past half century. Of the complex group of problems which might be brought under the general head of Famine Prevention, there are some which have been hardly touched, and others which are or appear to be at various stages on the way to solution. The organization of credit, the popularization of improved methods in agriculture

and industry, the improvement of relations between landlord and tenant, the utilization of sleeping capital, and the thorny problem of organizing charity and discouraging the "sturdy mendicant", all these are practical issues with which the future of India is vitally concerned. They are all questions which call for patient study as a prelude to experimental action ; and they open up a field of co-operation both in study and action between all who are honestly concerned for the well-being of the country.

I have been speaking from the point of view of the student of economics, and trying to show that economic studies have a practical bearing on such questions, and are capable of practical service in the task of solving them. But I do not wish to exaggerate this claim. There are broadly three standpoints from which these problems may be approached, and three sets of persons concerned with them. Economic students are one of these sets of persons ; practical men interested in the material progress of the country are a second ; and the administrative officers of government are a third. I do not think that any fair-minded person can doubt that up to the present time it is the last of these classes that has borne the burden and heat of the day, and has achieved the major part of such success as has so far been accomplished. It rests with us the students, and with you the practical men, to take our fair share in the work that remains. It is work which needs the co-operation of all three parties ; and there is no work which offers to common and organized endeavour a large promise of fruitful results. Many of the problems involved are extremely complex and difficult ; and that is a reason why they should be attacked from as many points of view as possible, so that all the light of knowledge and experience that is available may be brought to bear upon them. They can hardly be solved by individuals working separately. Probably many of them will never be finally or completely solved ; and partial solutions are only likely to come as the result of the joint and organized labour of many workers. But the whole field is one on which a work of real service may be accomplished by any one who enters upon it with a single

mind and in a spirit of thoroughness and sincerity. I doubt if there is any aspect of Indian affairs to which the watchword given by the King-Emperor to this country is more directly and luminously applicable. From the economic standpoint no sane man can doubt of the progress that India has lately made and is now making. About the future sane men do not prophesy. Remote prospects must always be uncertain ; but the present outlook at least is full of hope. In every direction are traceable " the signs and stirrings of new life ".

THE PATNA COLLEGE

CHANAKYA SOCIETY

“ कृषिपाशुपाल्ये वाणिज्या च वार्ता ।
धान्यपशु हिरण्य कुप्यविष्टिप्रदानादौपकारिकी ॥ १ ॥ ”

Agriculture, Cattle tending and trade constitute Varta (Economics)
is serviceable in causing increase of grain, cattle, gold and other metal's
and labour ”

—*Chanakya's Arthashastra.*

The Chanakya Society is a small association of the students of the Patna College. It was founded on the 8th Dec. 1909 at the suggestion of, and on the lines, laid down for it by Professor Russel. The Society has been named after Chanakya, the great friend, guide and philosopher of Emperor Chandragupta. The members of the society thought that they would be doing their duty by paying their humble share of tribute to the foremost statesman, economist and political philosopher of ancient India, whose field of activity was Patliputra, the modern Patna, where the Society had the good fortune to be established.

The Society was established with the immediate object of providing for its members an open field of original research and of enabling them to develop a spirit of intensive study and an analytical method of investigation. The ultimate object we had in view was to collect as detailed and trustworthy first-hand accounts as possible of the economic and social conditions of the people and villages around us, in the fond hope that they would be of interest and use to the future economists of our country.

The society has opened a vast and untrodden field of useful work for its members and has been of immense help to boys affording facilities for carrying on independent enquiries into the practical value of abstract economic doctrines by enabling us to study these doctrines in connection with concrete facts. It thus supplements the knowledge we gather from our books and lectures and makes up for the deficiencies of the system of education adopted by our University, which encourages a habit of getting up things without the minimum of attention to their significance and thus, instead of developing, chills the innate power of the students under the heavy load of the huge unassimilated information it wants them to be ready with for their Examinations.

The programme of work which the society started with consisted of enquiring into the condition of villages in Behar. This enquiry was carried on under the following five main heads, each variously sub-divided.—

A. Area and situation of the village.

B. Population.

C. Village organization

D. Land Tenure.

E. Condition of the cultivator

We followed this programme for a pretty long time and collected a goodly number of village reports. The programme was subsequently extended and enquiries were made into several kinds of tenures of land that obtain in our villages, the mode of assessment, the manner in which rents are collected and the incidence of revenue per bigha. The reports also deal with the items of litigation and show that real suits are more frequent in places where the Guzarati system of land prevails. From the reports received on the condition of the cultivators we noticed that the tenants in villages under the Bhaoli system (which prevails mostly in the Gaya district) were worse off than those

under the Nakdi system (which prevails *e. g.* in Shahabad). In spite of the Tenancy Act being in force in all the districts the Bhaoli system seriously impaired the utility of its provisions in Giva. A large class of the ryots were entirely under the thumb of the Zemindars who treated them very much as they liked. With regard to the Village reports there is one striking point worth mentioning *viz.* that they seldom agree with one another in various points of importance. Hence it is to be concluded that there is nothing like a typical village in any district, much less in a division or province.

Finding that the work of village enquiry entailed a much heavier work than we had imagined and discovering that it was not of so great an immediate interest to us in the method of intensive study that we had adopted, we gave it up for another as we thought of greater interest and practical utility. We adopted the system of enquiring into the condition of families. We did not fix upon any definite heads under which our investigations were to be conducted. The members used to gather as much first-hand information about the general conditions, fooding, income, expenditure, debts etc., of a family generally of the cultivating classes, as they could. We collected a large number of such family budgets from the different parts of the province. Our chief object in collecting these family records and budgets of villages was to know as much as we could of the condition of our labouring classes.

But in the October, 1911 (vol. IV No 3) issue of the Indian Interpreter there appeared an appreciatory criticism of our work from the redoubtable pen of Dr H. H. Mann of Poona. In that note he was kind enough to suggest that our family budgets would be of greater interest if more systematically obtained, with a more definite idea of exactly what is wished to ascertain. He also implied that it would be wise to concentrate primary attention on one or two special aspects of the life of the families and to let the remainder be incidental. This, according to him, would enable a larger number of cases to be gone over.

We are greatly encouraged by this note as well as by another from Sir Theodore Morison, who in a letter to Mr. Russell, the permanent president of the Chanakya Society, greatly encouraged us. Since then, we have been able to secure a copy of Mr. Buchanan Hamilton's invaluable work *Eastern India* and have had the advantage of noticing his method of investigation. In the light of these suggestions and models we have tabulated our family budgets on statistical bases and have prepared a programme according to which our village and family enquiries are to be carried on in future. We have arranged three forms, each containing various fixed headings under which we desire the investigations to be done now. Members have to fill up each form under its various headings and sub-headings, after proper enquiry.

We have been able to get only a few budgets under our new scheme, but we have reasons to believe that it will work well. An idea of our programme may be had by an inspection of the forms attached herewith. (Vide Appendix B.)

Besides this, preeminently the most important work of society which every member is expected to take interest in, there are some others which deserve mention here. To facilitate work, it was deemed advisable to form three standing sub-Committees. Accordingly 3 sub-Committees,—(1) the Agricultural, (2) the Industrial and (3) the Budget—were formed. The first of these investigates all matters relating to agriculture, the second studies industries, and the third sub-Committee arranges the budgets on statistical basis and being in charge of the funds makes necessary purchases for the Museum of the Society.

To enable the members to carry on their work, expeditions are undertaken to places of economic interest such as, Patna city, Dinapore, Behar and the Agricultural farm ; and also to the Sonapore and other fairs to study cattle breeding etc. The reports which are submitted are published in the college maga-

zine and are incorporated in the Annual reports of the Society. The Society has received many interesting reports on the various industries in the Province *e g* the stone work in Gaya, the Sphatika Rosary Industry at Bindidih in the Behar subdivision of the Patna district, the Fruit Preserving Company of Muzafferpur, the Button factory at Harsi in Champaran, the Cotton and Silk industries at Behar and the Iron foundry and Oil mills in the Patna city

The members are required to visit the Agricultural and Industrial Exhibition held from year to year and to study and report on the various products exhibited. They are to mark the changes, if any that may be perceptible in the quality of the articles exhibited. The reports show what industries there are in the province, what new industries have been started in course of the year and with what prospects and how many of the industries established are dying and why. Very few of the industries we have enquired into show signs of a healthy life. Most of them suffer from want of patronage. But no less do they suffer from inherent defect in their own organization. They start with insufficient capital, bad management, lack of business capacity on the part of those responsible for their superintendence, and an utter ignorance of the wants and tastes of the customers. The majority of them are too petty to live long and die a natural death. But we have no hesitation in saying that some of these would turn out to be of great importance and world-wide fame if sufficiently financed and properly organized, *e g.* the Fruit Preserving Company of Muzafferpur, the Mica mining industry of Gaya, etc

Ordinarily a meeting of the Society is held once every month. In these monthly meetings the reports of the members and the family budgets collected are discussed and criticised. These meetings are open only to the active members of the Society. But we hold an annual public meeting in February or March every year. These meetings are open to all and the annual report of the work of the Society is presented here. Criticism

from outside are invited and if useful are gratefully acknowledged. It being the object of the Society to be acquainted with and appropriate truth from all quarters, we want our works and methods to be criticised and our defects pointed out to us. We place an account of the constitution, methods, and works humble though they be, of our association before the delegates assembled here from all parts of the country in the hope of receiving valuable suggestions from able, experienced and practical businessmen as well as from thoughtful and learned economists and doubt not that these will be coming forth in abundance. Might we not hope, if our work is appreciated and is found to be of some use that similar societies will be established all over the country through the influence of the well wishers of the country assembled here from distant provinces, and that these will co-operate with each other in gathering materials for, and ultimately, in the making of, a complete, thorough and unprejudiced system of Political Economy for our country.

APPENDIX A.

CONSTITUTION AND RULES OF THE CHANAKYA SOCIETY.

1. The objects of the Chanakya Society are —
 - (a) To study the social and economic history of Behar.
 - (b) To carry out local enquiries into present economic conditions
 - (c) To discuss and, if possible, to promote the introduction of improvements and reforms of an economic character.
 2. Ordinary membership is confined to students and professors of the Patna College ; but gentlemen not belonging to the College who are willing to help in the work of the Society are eligible as Honorary Members.
 3. The Society will meet once a month.
 4. At each monthly meeting all work done during the past month by the members will be reported and discussed and a programme will be adopted for the next month.
 5. Every ordinary member on joining must undertake to carry on some kind of continuous and systematic enquiry on behalf of the Society.
 6. Small expeditions will occasionally be made to visit and inspect local industries.
 7. Members may subscribe any sum they like towards the Society.
 8. Such subscriptions together with any grants which may be made from “ the New Fund ” of the College will be applied in the first instance to forming a collection of the cheaper products of local industry. Money may also be spent on travelling expenses for purposes of enquiry and on copying and printing charges.
-

DIX A.
Budget.
A).

Income					Total Value	Remarks
Income in money					Rs	
Income in Grain					A	
Value in money of the grain					P	
Other paid in kind						
Its Value						
Services rendered						
Presents						
Value of presents other than cash						
Money Borrowed						

DIX B.
Budget.
B).

Dhobi.		Extraordinary	Remarks
Cash			
Kind			
Value			
Potter			
Blacksmith			
Carpenter			
Priest			
Interest on Debt			
Repair of house			
Tobacco, Pan, etc			
Intoxicants, Wine, Toddy, Bhang, Ganja, & Opium etc			
Pujah			
arrange			
Entertainment of guests			
Education			
Pilgrimage			
Donation, alms, etc			
Total Expenditure			

DIX C.
Return.

Fish	Ghee	Sugar	Vegetables	Oil	Lamp	Bases of Enquiry
Daily In cheap Seasons only On Special Occasion Never	Daily In cheap Seasons only On Special Occasion Never	Daily In cheap Seasons only On Special Occasions Never	Daily In cheap Seasons only, On Special Occasion Never	Daily In cheap Seasons only On Special Occasions Never	Kerosene oil, Candle or gas Indian oil lamp.	Evidence. Guess.
Remarks.						

WORK=A=DAY INDIA.

BY

Frederick Noel Paton,

Director General of Commercial Intelligence, India.

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The purpose of these conferences is to lay plans for the future. It is right that we should consider that things that remain to be done or improved, rather than the things that have been accomplished. But as I travel about the country and notice the diversity of the industrial and commercial activities already in operation and the degree of organization to which we have attained in prosecuting them, I come to doubt more and more whether the day has not gone past for speaking of India as if it were still a raw material. I am sure that persons abroad fail to realise how far India has advanced in commercial organization. A good many Europeans in this country are disposed to gauge by western tests the organization which we have evolved and to conclude that, where our organization is different in kind from that encountered in the western world, it must necessarily be inferior in efficiency. And Indians with no foreign experience are a little prone to be disheartened by the legend that their organization, being less uniform, is necessarily inefficient. We all know that in many cases our organization is less precise, less rigid in its operations; and the prime purpose of our conferences is, as I have said, to ascertain in what respects greater precision and greater simplicity can be introduced with advantage. That also is the purpose of much of my own official work. We must bear in mind that as a rule a system evolved by a multitude of compromises is usually less uniform and more complex than one that is erected on a set of principles already formulated, although these principles may in fact have taken

form from experiment. High organization in fact commonly consists in simplification. But such simplification usually involves a departure from usage, and so at first sight looks like complication. While a highly organized machine may, under uniformly suitable conditions, work with greater precision than a rudimentary one, it does not follow that under variable conditions precision will result in-efficiency. A steam plough may be enormously more efficient than an ordinary plough where the fields are large and free from obstacles, and yet be utterly inefficient in tilling the small patches into which holdings in parts of India are almost necessarily divided. A motor wagon may be more efficient than bullock traction on a perfect road; but what if there be a slough at a ford or one weak culvert? It is our business to take stock not only of the points at which organization must be improved and simplified, but of those at which it appears in fact to be fairly efficient. And it occurs to me that it might interest you if I could put into words some of the impressions of work a-day India gathered by a person who has visited most parts of the country, seen most of her trades and industries in operation, and talked with most of the leading men who are conducting them.

And how variegated and interesting are these impressions! Calcutta with its teeming river, its jute and coal and tea, its splendid open spaces and its whole-hearted enjoyment of a grievance. Bombay with its enterprise and self-confidence, its magnificent harbour and thundering surf, its hundred cotton mills, its splendid docks and its cosmopolitan populace pushed into the gutter by pervading railway tracks. Madras with its growing port accommodation, its multifarious industries, its wide Marina and spacious compounds and its kaleidoscopic costume that flutters and glints in the fresh sea wind along its sun-flecked wooded roads. Karachi, an oasis of sun-baked brick and superb bumptiousness growing indomitably between twin deserts of sea and sand; Karachi with its tentacles fixed in the rich wheat hinterland; with its problems, programmes, propositions, its camels and its dust devils stalking suggestively

from the grading yards. Two thousand miles away, the great golden pagoda of Rangoon gleams through the smoke of a hundred rice mills and steamers and the quivering vapours that rise from vast oil refineries; while the most engaging and alterly supine people of the East pass in tramcars to its gates, and elephants wrestle with teak-logs along the muddy shore. Cawnpore, versatile in enterprise, with its cotton mills, woollen mills, sugar works, leather works, brush works, distilleries. Heaven knows what—a city whose past is atoned for by the successful co-operation of West and East. Delhi, the Indian prototype of Rome with its forum and campagna and all the debris of a tremendous and sinister magnificence stretching in serried aloofness to the horizon and dwarfing the smug architecture of to-day as Kinchinjunga dominates Darjeeling. Madura with its handlooms and its muslins, its temple of splendid vistas fretted with sculptures that show, above all, what ugliness of form and conception may be venerated by pedants in art. Go where you will, you find the rising stream of skill and welfare creeping across the country; and it is our task to lead it in the right directions as an irrigation officer conducts his fertilizing flood.

But please understand that my intention to-day is not to instruct. My purpose is one that would be much better performed by a cinematograph. I want to call up before you a set of pictures of a few characteristic industries and trades in India and to leave you, if possible, with a greater pride in our country than before, and a deeper respect for that co-operation of East and West by which we have advanced so far and without which we should go no further. Nothing could testify more strongly to the desirability of a partnership between the resourcefulness of the Britisher and the adaptability of the Indian than the accomplished evolution of commercial and industrial methods possessing all the flexibility required in a country like this.

But how is it possible in the scope of a short paper to give you even the vaguest impression of the magnitude of India's economic phenomena or of the skill, patience and enterprise that have planted industries in the remotest corners of the Continent?

Four hundred millions of people ! One million seven hundred and seventy square miles each with 640 acres ! These vast figures are entirely out of relation to the largest number of people we have ever seen or to the widest expanse that our vision can reach, and they convey no exact meaning to us. A score of millions one way or another would not affect the general impression. Even when we say that British India and Burma are supposed to comprise about 270,000,000 acres of arable land, of which 223,000,000 acres are actually cropped, the statement calls up no image and remains a mere arithmetical expression. We only begin to grasp the grandeur of the affair we are concerned with when we picture the size of one acre—when we remind ourselves that one raiyat can till only about two acres, and when we consider that every one of those 223,000,000 acres is gone over, foot by foot, not once a year but repeatedly in every year, by that indomitable, pertinacious little animal called man armed with a piece of iron on the end of a stick. When we reflect that every clod in every one of those wide fields we see from the window of the train has been turned over, and possibly handled, by man within the last few months, the soil seems to be part of humanity, and the tremendous statistics of production and exportation appear insignificant beside the vast and vital function that is being preformed under our eyes. It requires an effort to focus one's mind to the thought that every one of those people is an individual whose eyes and whose thoughts have been possessed through days and months and years by some few square yards of land to us undistinguished from the rest.

The most vivid impression reproduced when I close my eyes and switch my mental vision over the memories that range from Burma to Karachi and from Chittagong to Cochin is that of a vast anthill with a swarming and countless populace hurrying to and fro. An impression, you will say, gathered in the market place ! Certainly not the impression of the district officer or of the forest officer in the jungle ! In the lonely places, one may recognise the ploughman, the wheelwright, the weaver, the fisherman by the insignia of his calling ; but the great mass of

the labouring classes—the *munghi-log*—that one sees hastening in all directions—are engaged on errands and activities which we shall never know, and the true bearing of which is in very many cases only half understood by the emissaries themselves. And yet every one of these obscure and mysterious individuals is a part of one of the greatest machines in the world—your machine and mine, in which we must have a common pride. Every hut we pass in the roaring express train is the centre of the universe to some of these people. They think of themselves only as individuals and do not know that they are parts of the machine. Yet the implacable law of supply and demand, which they never heard of, moves them sooner or later to that place or to that occupation in which they can best contribute to the general advance. So we see, on every hand, the people hastening to and fro, the soil turning under the plough and spiriting from the mattock, the seed being scattered and the sickle wielded, the cattle toiling along the roadways with loads of produce destined either for a foreign continent or for some part of India whose very name has never been heard by the grower or the carrier.

By the paths and roads of Eastern India and of Burma, near the closing of the year, the dribblets of India's greatest product, rice, begin to move, carried in baskets by the countless *munghi-log* or in carts of quaint pattern drawn by that conscientious but ineffectual objector the bullock. By clumps of bamboo, that wonderful plant which furnishes everything from masts to paper pulp. through groves of mahogany or teak or "sundri" to which the timber users of the world will have to turn in years to come. past swamps where sugar-yielding nipa palm contends with mangrove and a dozen other tanning materials, come the dribblets of rice in picturesque craft propelled by oar and sail along the beautiful creeks that swarm with fish. And the dribblets merge in runlets, and the runlets in streams, and the streams in a vast flood that covers the face of the sunny rivers, and chokes the railways and surfeits the mills, and pours out from them across the sea in scores of ships, feeding

the famine-stricken further East and swamping the markets of Europe till they can take no more at any price.

A little later, and the North and North West are rustling from end to end with golden wheat and oilseeds. Here, as in the river tracts, the cattle circle, treading out the corn ; and, when the wind blows well, the landscape twinkles with a hundred thousand little jets of chaff and grain thrown heavenward for winnowing as if in an ecstasy of thank-offering. Here the whirl of the reaping machine and the hum of winnowing and sifting machines introduce the note of progress ; and the cultivators talk in moments of leisure about the great elevator bins that are being erected at Lyallpur in order that large quantities of wheat may be stored in safety and despatched expeditiously by rail. Here as in Burma, the railways become choked with produce. Mountains of grain accumulate in the goods yards and godowns. The traffic officers are besieged with demands for wagons, ships lie in the harbours waiting for cargo that cannot get through, the telegraph wires vibrate with protests from indignant merchants. Then perhaps comes one storm and in twenty-four hours destroys wheat and seeds to the value of many elevators ; and still the merchants clamour for more wagons. British India produces some 30,000,000 tons of rice every year. The yield of wheat in all India is about 8,400,000 tons, and her yield of linseed and rapeseed about 2,500,000. The value of the rice is believed to average about Rs. 333 crores and that of wheat about Rs. 73 crores. But the producer is not in a position to hold very much of his grain crops in security. He has to sell a large portion at harvest time for what he can get, because he wants ready money. He is somewhat less pressed in this respect than he used to be ; for he has as a rule made good profits for a number of years ; but he is still without means of storing his grain in safety, and if he holds it under prevailing conditions he is likely to lose through deterioration more than he sacrifices by immediate sale.

About one-fifteenth of India's recorded rice crop is shipped abroad, and about one-ninth of her wheat. There are times when high prices draw much more than these proportions into the exporter's hand ; and—more particularly in respect of Burma rice—there have in the last two years been moments when exportation has been made on such a scale as to create some danger of famine. For Burma is badly furnished with railways ; and the traffic on her waterways and the mechanism of her trade are of a kind not easily utilised for the distribution of supplies. The steamers of the Irrawaddy Flotilla Company ply on the main channels , but they could not find their way into all the smaller creeks to which supplies might have to be carried in time of shortage. It must, however, be remembered that the circumstances of the rice trade in the past two years have been altogether exceptional and have resulted from extensive and simultaneous failure of crops in a number of other producing countries. It would be hard on the cultivator if any measures were instituted to restrict his sales at profitable rates when he had a surplus to dispose of—especially when no proper means exist for its preservation. If he were not free to make hay while the sun shines, there would be no inducement to him to extend his cultivation, and he would not now be shaking off the shackles of the money-lender as he is doing. The question of furnishing the cultivator with better means of storage is one of the matters in which the time has perhaps come for a further adoption of western methods, and certainly for the systematic study of all the aspects of those methods as adapted to India's trade in rice, wheat and seeds. The congestion on the railways seems always to be at its worst in the season for wheat and seeds ; and it is commonly spoken of in India as resulting from inadequacy in the supply of rolling stock. But in other countries it is held useless to multiply wagons without adopting the complementary elevator equipment that enables a railway to handle its wagons quickly. What is the use of ten buckets at the well if you have only one draw rope ?

This is one of the weak points in our mechanism of the trade. On the other hand the organization for bringing the produce together, though it may be different from that in Canada or the United States, is not truly primitive. I once quoted to a learned professor a statement which I had read, to the effect that birds represented one of the lowest forms of life. I was pleased when he replied : " That is just the sort of nonsense that pedants talk. A bird is as highly developed on its lines as we are on ours." Similarly, our commercial system is in reality highly developed and fairly efficient. All over the country, in Burma as in India proper, the middlemen swarm for months before the harvest time—making advances, arranging terms, and distributing the jute bags and bale-covers for the coming crops. Through the channels of bank and treasury, the flood of rupees begins to rise and flow. Day by day and hour by hour the cable advices from the foreign markets tell the great export firms the prices obtainable ; and the inland wires carry the news to hundreds of local agents in the districts and the upcountry markets. The systems on which these middlemen act are almost infinite in their variety ; but this, so far from being a defect in our practice, is evidence of its extraordinary flexibility. It is true that in some places the complex and obscure nature of our weights and measures puts too much power into the hands of the broker and leads to practices under which a good deal of the money that passes sticks to the hands of middlemen by no means indispensable. This condition is peculiarly prevalent in Burma where rice is brought and sold by the hundred baskets, while the baskets are of every conceivable size and capacity. Government has refrained from enforcing reforms in the matter of weights and measures, knowing that the people would themselves ask for such reforms sooner or later. And the frequency with which in recent years Indian merchants of all degrees have raised this question in their conversations with me, shows that the movement is gathering strength not from any theoretical predilection but from realization of the inconvenience and waste incurred. Here again is a sign of practical progress made.

But we must back to our crops.

Before the season of wheat and seeds is closed, the tea gardens of North Eastern India come into bearing. Here there is less appearance of hurry. The beauty of the country, the sylvan character of the vegetation and the slowness of the process of gathering the leaf combine to disguise the underlying activity ; and only in the neighbourhood of the tea house, where we can see the smokestack and the hastening basket carriers and can hear the rumble of the machinery, do we realise the closeness of the organisation

There is something in common between the spectacle of work in a tea garden and that on a rubber plantation where men move about in the sun-flecked shade under the trees, tapping, placing and emptying the latex cups and hastening away down wood land paths with covered enamelled pails full of the collected sap. In the factory the latex is mixed with dilute acetic acid or other substance designed to coagulate it ; and then, when the surplus water and the acid have been squeezed and washed from it, it is carried to the drying room or smoked. Here as in the tea garden the outdoor work is skilful and delicate and there is little evidence of man's strenuous driving power except in the many blackened stumps and fallen trunks of great forest trees that show how the primeval jungle has been ruthlessly swept out of existence to make way for one of our new industries said to be already threatened by the chemical synthesist. But even the most secluded tea garden or rubber estate is closely linked with the great organisation of our commerce. Everywhere the typewriter clicks, the weighing scales rock and clank, letters and telegrams, carts or boats or messengers come and go, stores arrive and produce is despatched, wages are paid promptly as the hands file past at an appointed time. In the dispensary, drugs are administered or wounds are dressed ; and even the local shopkeeper finds a limit set to his predatory instincts by the iron handed management.

With the rains, the jute crop rushes up; and by July a man may lose himself for ever in it, as troops in certain wars have lost themselves and been burned in the wide plains of maize. The spectacle of the jute country before the crop is cut has something in it suggestive of the great wheat tracts in the Canal Colonies of the Punjab. On every side, and right to the horizon, stretches a sea of velvet green broken only by clumps of trees. But whereas in the Punjab colonies the trees are mostly young and the foreground one of very dusty and well-worn road, in Eastern Bengal the trees are of every age and form; and the foreground is a winding waterway, with gypsy colonies living on pileborne houses high above the marsh, and with boats plying to and fro with store of fresh jute on board and alert-looking owners at the helm who answer the passing bid of the European in the launch with a prompt quotation fifty per cent. higher. By the middle of August the movement of the jute crop in a good year becomes pandemoniac. The country reeks with the retting and steams with the drying of the fibre. Every craft that will float plies to and fro continually, carrying the tawny freight to the local markets, to the depôts of the big firms, and thence to Calcutta or to railway points. And here too is an organization close in all its links, extraordinarily efficient in its way, and entirely above any charge of primitiveness. No doubt there are abuses almost inherent in it. No doubt there are too many middlemen. But the middlemen are less numerous than they were; and efficiency is a relative term. A system, however informal, must be held to be efficient if it is attended with less friction and fewer abuses than would occur under one more rigid.

Soon after the flood tide of the jute crop is spent the cotton bores in the centre and north and south of India begin to swell and burst. India is supposed to have some 22,500,000 acres under cotton and to produce about 800,000 tons of lint with 1,800,000 tons of seed. As the crop develops, the busy people swarm over the face of the land from dawn to dark. Scores of thousands of carts—each with two bullocks and every bullock

with a name that is a household word in some small home—creak along the uneven roads carrying the kapas to the humming ginneries whose smokestacks multiply yearly against the horizon. Day and night the gins roar as they tear the floss from the seed, and presses creak and wheeze and clank as they gulp whole stacks of lint and spit out steel-bound bales to be hurried to the rails and cast into the jaws of the breaker and opener or into the black maw of a ship for Japan or Germany. The trains go thundering to the coast and then toil back again, light loaded, up the great western range for a fresh freight; while others, by day and night, are speeding westward from Bengal with jute cloth for packs and bale covers, and with coal for mills and gins. And all over the vast continent the station lamps twinkle watchfully and the signal lights gleam green or red, and busy men speed through the darkness in the blazing passenger express that leaves a trail of mail bags and bustle behind it while the wires on either side throb with the dregs of the day's messages. In the upper reaches of the Irrawaddy, the raftsmen work their teaklog holding of two months to the bank and tie it up in a gorge that is haunted by fierce beasts and by legends of demons scarcely less to be feared by these simple folk. Giant trees and colossal crags overhang them and break up across the star-strewn sky; and the river hastens by, mouthing the edge of the raft and muttering invocation to the mists that rise and slowly veil every feature. Far as the eye can see only one blurred light now gleams, and that is the raft lantern—exorciser of devils. It bears the name of a timber firm in Glasgow and burns much-travelled kerosene that has made the trip to Rangoon by pipe and thence to Myitkyina by rail and down by river through one of the most lovely countries that God ever made.

Lower down the Irrawaddy and on a score of other Indian rivers, if light be good and wind be fair, quaint craft of every kind go lumbering, in the glare of the wheeling searchlight, across the bows of hooting river steamers; while out on the sea great ships, ablaze with light, go past like glow-worms, their engines throbbing like titanic hearts as they grope their way

from port to port or vanish over the horizon towards Europe, Australia, Africa, China, America. As the sun rises over Burma and climbs into the sky, a breath of strenuous life sweeps westward across India. In the lonely places the cultivator and the herd go forth uncalled, and the hardpressed weaver clambers back to his loom as soon as he can see the threads. In the cities the hooters bray from point to point. Labourers hasten to their factories, their jute mills, cotton mills, flour mills, woollen mills, rice mills, saw mills, oil mills, sugar mills, dye works, workshops. Then with a crash and a scream the engines start and India is at work again. Down through the passes from the North, the trains of pack animals—mules and yaks, and sheep, bearing wool or borax from Tibet—begin again to creep cautiously, with bell and spear to scare the belated bear. Eastward the convoys push up from Bhamo to the China frontier with freight of Indian yarn and European cloth. Down into the Punjab comes afresh the stream of the brawny Pathan people to batten on the land of plenty which loves to beat its breast and proclaim its destitution. The Chinese quarrymen in the wolfram mines of Tenasserim go to work with the staidness peculiar to their race ; while the Japanese pearl-drivers in the lovely lagoon of Mergui get into their diving dress, without disarranging their carefully parted hair, and drop over the side with a plume of bubbles to their crest. Steam dredgers for gold at Myitkyina and for tin at China Hong and dredgers in harbour creek and river begin to clamour with that querrulous stridency that no other form of machinery can emulate. Great trees in the forest crash to the ground and are hauled to the saw-bench to be turned into sleepers and scantlings. In Rangoon, Moulmein, Bassein, Akyab and all over Eastern India, the rice mills begin to thunder and to cover the estuaries with a scum of paddy husk. In the Hooghly, bargeloads of gunny bags for all parts of the world put off to vessels loading in the stream ; and one after another, great river steam-boats arrive from the Ganges or the Teesta, from Narayanganj or Chittagong, and shake off their attendant flats before moving to their anchorage. Cargoes of coal pour with black clouds into thundering holds and bunkers. Throughout

the waterways of the Bramaputra and the Sunderbuns there moves southward a vast fleet of jute boats that look, in contrast with the graceful rice boat of the Irrawaddy, very much as a cockroach would beside a dragonfly. Once more the bucket that does duty for a cage goes down into the pit at Jerriah or Raniganj. The hauling tackle swings and sings again, and tubs come bumping up the incline laden with the fruits of the last "fall". On the oil fields at Yenangyaung, the beams begin again to rock and thump; and keen-faced drillers from Pennsylvania stand to their rigs, with one hand on the cable, reading the percussion of the bit a thousand feet below. The great new iron works at Kalimat have been aglow all night, their gas-stacks blazing like torches of awakening to the world; but mills and workshops put on a new activity with the morning. The manganese workings in the Central Provinces resound again to the shot of dynamite and the clatter of falling rocks; and a hundred million little pertinacious men, each with a piece of iron on the end of a stick, are scraping, digging, patting, tearing at the earth at rate of perhaps a thousand million strokes to the minute. Through the beautiful groves of pepperfestooned palms in Malabar, the comely cheery Malayali people, prosperous under the thrifty feminine domination, move to the primitive factories where cocoanut kernels are dried for copra and where their husk is beaten into coir. From end to end of India and up to the furthest limits of her frontiers, speed the post runners of one kind or another. The irrigation officer goes out upon his rounds. The engineer is seeing that his bridge is well and truly laid. The traffic officer is combating a congestion that was not foreseen by him or by any of his mercantile critics who would have quickly made their fortunes had they been more perspicacious than he. The port authority is marshalling in and out the vessels that carry on the commerce of India with other countries. The banks throw open their doors and once again the air is full of the rustling of myriad rupees and currency notes like the rustling of the leaves of a teak forest when a thunder shower begins to fall. In Cutcherry, Secretariat and court of law, officials are at work devising, revising, advising, wherever our machinery has seem-

ed to be at fault. In every merchant's office are men, trained in the technique of their craft, scheming and toiling to bring demand into relation with supply. At almost every point, it is true, the hand that does the maternal work is the hand of an India. But—be the reason what it may—at most points still the head that has organised and the voice that has taught have been those of the European. It will not always be so ; but it still is true. And there is no lesson that I have learned more clearly by my examination of the industries and trades of India than this. If we are to do justice to the country we must work together, European and Indian, at the tasks we respectively do best. Jealousy or exclusiveness by one or other at this stage of our country's development must have consequences as ruinous as estrangement between old and tried partners who know each other's worth. And irresponsible talkers who are willing to sacrifice or even to jeopardise a tried and profitable partnership for the sake of some private political feud evolved from loose conjecture and a smattering of doctrine are dangerous fools whom serious men of affairs must make it their business to silence.

UNLIMITED LIABILITY AS A NATIONAL ASSET.

BY

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A famous statesman once said that the greatness of a country could be judged not from the size and strength of its armies but from the number and reputation of its banks. Even now the banking machinery of India is far from being adequate for needs of the population. There are, of course, the Presidency and the great Joint Stock Banks; and new banks of one sort or another are coming into existence almost every day. But these are all concerns which serve the wants of large cities and towns. It is agriculture, as everybody knows, that really supports India. And it is pertinent to ask how far the ordinary banks have succeeded in getting into touch with agricultural interests. To answer that they have scarcely succeeded at all would be no exaggeration. The reasons for their failure in this direction are not hard to find. In the very first place, the Banks admit that (as behoves shrewed business people) they are well aware of their own limitations. They are remote from the cultivator: and proximity is, of course, the first essential of credit. India is, for the most part, a country of small units; a vast rural area of small villages, small holdings, small dealings, and small incomes. And yet, withal, these same small units make up a huge aggregate. The seed put into Indian fields represents, by itself, a tremendous recurring capital investment; the necessary cattle and agricultural implements are not to be had for nothing: and the value of the produce of each harvest runs into gigantic figures. The commercial position of an agricultural country which can absorb, without apparent effort,

(as India can) one-fifth of the whole world's annual output of gold is important indeed. Nevertheless it is common knowledge that all is not as it should be with the actual source and fountain head of India's wealth as represented by the humble cultivator. Those who are in a position to observe naked facts know that the Indian peasant is, in truth, suffering from an economic malady of long standing,—an insidious disease but an exceedingly dangerous one which must, in the end, prove fatal unless vigorously and continuously treated. The symptoms are complicated, and if the diagnosis is to be correct attention must first be directed to the causes at the root of the trouble.

It should be evident to all thinking men that it is no more possible to injure one part of the community without injuring the body politic, than it is to injure one portion of the human body without injuring the organism as a whole. The doctrine that the ultimate interests of the several classes in the State are opposed to each other was exploded 2300 years ago. Discontent had fastened on certain classes of the Roman citizens who fancied that their special interests were to be sacrificed to secure the betterment of other classes. Some said "The poor can only become richer by making the rich poorer". Others said "The rich can only become richer by making the poor poorer". To both arguments the great Menenius Agrippa replied in the following fable :—

" In times of old, when every member of the body could think for itself and each had a separate will of its own, they all with one consent resolved to revolt against the belly. They knew no reason, they said, why they should toil from morning till night in its service, while the belly lay at its ease in the midst of all and indolently grew fat upon their labours. Accordingly, they agreed to support it no more. The feet vowed they would carry it no longer ; the hands that they would do no more work ; the teeth that they would not chew a morsel of food even if it were placed between them. Thus resolved, the members for a time showed their spirit and kept their resolution. But

soon they found that, instead of mortifying the belly, they only undid themselves; they languished for a while, and perceived too late that it was owing to the belly that they had strength to work and courage to mutiny!"

The moral which this ancient Roman wished to point is applicable to India. If it is admitted (and a reference to statistics of trade, resources, and population must compel the admission) that the prosperity of India is sustained by her harvests then, clearly, the soil itself represents the national belly. The soil supports the cultivator, the cultivator supports the middleman, the middlemen the grain dealer, and so on. Where would the lawyers be if the agriculturist had no money to spare for litigation? Who would buy from the merchants of the towns if there was no money in the villages? It is an axiom that the richer people are the greater become their wants and aspiration. And if our scheme of Indian social reform is not to level down but to level up, not to take away from those who have in order to distribute in infinitesimal dribblets amongst those who have not, not to provoke class hatred but to induce all to work harmoniously together for the common good, we shall not have to depend our policy from the attacks of wise and prudent men. Social reform, properly understood, means, quite simply, the policy of elevating the moral character and improving the skilled capacity of the people. The real assets of a nation are not its coal mines or its wheat fields but the skill and character of its members. The State, if it is to be alive and vigorous, must be moulded by its individual citizens despite the assertions of confused thinkers that the citizen must be moulded by the State. These are the principles upon which the co-operative movement in India is founded; and the success which co-operators have achieved is already so remarkable that it is worth while reviewing the methods which have been followed.

When Frederick William Raiffeisen devised his system of co-operation he laid great stress on the educative force and value of the acceptance by small groups of borrowers of "un-

limited". It must be remembered that it is the main object of co-operative credit societies, with unlimited liability to create a special form of marketable security. The real purpose in view is to substitute for weak isolated credits one strong combined credit with character and integrity as its main assets. The time for debating as to whether we, in India, can do this has passed and gone. Co-operative societies of this kind exist in thousands, and all who have had experience of their working appreciate their good effects. The District Judge who found recently that his cause list had discredited by no less than 1100 cases in a single year and was not slow to attribute the fact to the influence of the co-operative societies stands as a witness to the reforming power of "unlimited liability". And from all sides comes testimony of a similar kind. We hear of defaulters expelled from caste, of fellow members saving a weak brother from bankruptcy and disgrace, of dishonest borrowers being soundly beaten by their irate but honest associates. I can point to societies of weavers who seemed before they co-operated, to be last to almost every sense of shame. Drunkards and gamblers they formed an easy prey for the petty usurers who exploited them to the full. Under the influence of "unlimited liability" a new sense of responsibility has been roused, and these same men are to be found exercising a mutual supervision over each other's affairs which does not countenance indulgence in any habit which is likely to cause loss to the society. "Unlimited liability" has created a public opinion where none existed before; and those who know and understand the lives of our Indian artisans and cultivators will know that this in itself is an achievement which cannot fail to be far reaching in its consequences. Already these weavers are asking for improved looms and better material. Recently they asked for help to open their own shop; and when it was pointed out to them that a shop could not be supported unless the existing societies were strengthened and fresh societies were formed they (who but a year or so ago were quite without initiative) volunteered to go and obtain recruits themselves. I can point to a society of metal workers composed of men from whom the spirit of indus-

try had been entirely crushed out by usury. They had scarcely come under the influence of "unlimited liability" before they asked for an improved lathe and expressed a desire to advertise. True, we had been able to come to an arrangement with their creditors and to hold out hopes of ultimate solvency ; but it was the feeling of strength in association that really rekindled ambition which must have remained cold and dead but for the possibilities opened out by the acceptance of "unlimited liability". I can point to rural societies of tenants who were content to sow any seed however poor and to promise to pay any rate of interest however high before they came under the spell of "unlimited liability". Now they demand the best seed available either from Government seed farms or private seed farms, savings deposits are being made and reserve funds accumulated and rates of interest are no longer matters for indifference. I have purposely referred to cases in which men of poor reputation have mended their ways when given the chance to do so. For my object is to point out that "unlimited liability" has a way of fashioning good stuff out of apparently unpromising material. The better the material, the better the results.

The most aggravated forms of the economic malady have been indicated first. The symptoms are not hard to recognize. Ill cultivated fields, inferior workmanship, squalid homes, apathy and listlessness, and the smell of rank usury contaminating the atmosphere. But there are premonitory symptoms which like those of incipient insanity, do not at once strike the observer. A rigid adherence to customary methods survives because they are customary, the hoarding of all savings, extravagant ceremonial expenditure, fondness for litigation, and, but not least, indifference to the advantages of education (in the term in its wider sense),—these develop, unless checked into the advanced stages. All give way it, as the doctors we "exhibit" the remedy of "unlimited liability."

The first question I would ask the man who clamours for social reform is this. "What axe have you got to gri

Assuming that we are living in the Palace of Truth the answer will probably disclose the fact that our would be reformer, is of the "have" and "have not" school. Quite briefly, the reforms he advocates are intended to take rights and property away from others in order to bestow them upon himself (first), and his class (next). The schemes of reformers of this class are elementary, but it must be admitted that founded, as they are, on human nature (which is probably very much the same to-day as in the stone age) they cannot be neglected. Hague conventions and theories of universal peace are admirable. But preparations for offence and defence still remain part of the programmes of Governments while war is not yet a thing out of date. And where the interests of rival countries come into conflict the most efficient country emerges triumphant. The plain fact is that the people of the world are never at peace; for there rages, continuously and unceasingly, a fierce struggle for trade to which there is no finality. It is superfluous to point out that the country which takes least trouble to prepare itself for the struggle must, in the end, sink to a level of unimportance.

If it be admitted that the real assets of a nation are the skill and character of its members it follows that all who desire to take an active part in working for the common good will welcome the avenues for advancement which are opened out by "unlimited liability". They will probably want to know how this potent remedy is to be administered. In the first place, then, if liability is to be unlimited it is essential that it should be extended only to men who have an opportunity judging each other's merits and defects. For this reason co-operative societies with unlimited liability are generally confined to a single village and to neighbours who see each other every day and know all about each other's ways and customs. An infant society formed among such people soon begins to exhibit a public opinion of its own. Should a member be bold enough to cheat his fellows, he soon finds that this new medicine has aroused a contempt for dishonesty which did not perviously exist. He finds, perhaps, that his fellow members watch him closely, but that their

supervision is always for his moral and material benefit. For instance, he wants to purchase bullocks with money borrowed from the society ; the members will not only see that he does buy bullocks, but that the bullocks are good and healthy ones. If he wants to sink a well and takes a loan for the purpose, his fellow members will, depend upon it, see that the well is properly constructed. If he wants to borrow an extravagant sum for marriage expenses his fellow members will refuse to grant him a sum larger than he can afford to spend upon ceremony. "Unlimited liability", in truth, makes not only for economy but for the creation of capital by ensuring that money is profitably expended. The principle is this. The borrower is to be given time to pay back his loan out of the profits he has secured from it, and he is to be left the better off for the transaction and not with a dead weight of unproductive debt to carry. In most cases, it will be found that borrowing weakens a man's resources because profits are dissipated before loans are repaid. It is one of the main objects of co-operative credit societies to prevent this. Petty disputes which occur between members are, it is found, no longer taken to the Civil Courts for decision but are referred to the arbitration of the society committee or of a general meeting of all the members. And so it comes about that "unlimited liability" makes for thrift and prudence in a number of ways which are not at first apparent to the casual observer. It is remarkable, too, that in villages where there are co-operative societies a genuine desire for education is soon apparent; for "unlimited liability" brings home, as nothing else can, the pains and penalties which are attached to illiteracy.

It must always be remembered that the co-operative movement in countries where it has attained grand dimensions owed its origin to the fostering zeal of men of superior education and enlightenment who were content to go into the villages themselves and there devote their time to the education of their humble brethren. These workers did not pause to consider what their responsibility to their country was; but they did their utmost, and did not ponder whether their liability for the

welfare of the people was limited or not. We, in India, to-day stand in urgent need of more unofficial workers in the co-operative movement. They must be men of zeal and of understanding as well. The two must go hand in hand. Provided a sufficient supply of such men is forthcoming (and I, for one, believe that it will be) the prospects of the co-operative movement in India are great indeed. To quote the words of our King Emperor at Delhi "if a sound system of co-operation can be introduced and utilized to the full, a glorious future lies before the agriculture of India". And, it may be added, not only before Indian agriculture but before industrial interests and all classes of the community. Granted, then, that we have a sound system of co-operative credit societies, the next step is to turn the new kind of security which they offer into a negotiable form. The stream of capital has to be brought down again to enliven the source from which it originally came. Co-operative societies borrow money on the strength of their "unlimited liability" and all the attributes which the term implies. They deal with Central or District Banks formed for the express purpose of financing them. These Central Banks include in membership not only the societies themselves but also leading men who have undertaken the work of co-operative education. The Directors of Central Banks include amongst their number landowners, lawyers, merchants, and, in fact, men of almost every trade and profession. They work at first without any paid staff, and honorary organizers bear the burden, assisted by the Register of Co-operative Societies and his small staff. Next, comes the stage at which Central Banks employ their own staff; and then the stage at which the societies themselves take an active controlling part in the affairs of their Central Bank and contribute towards its expenses. Experience has shown that Central Banks, when well managed, are able to attract capital

if not from the open market, at any rate, from a Co-operative Provincial Bank which constitutes the last link between the ordinary financial system and the small society with "unlimited liability". The edifice has been built upon the character of the people ; and its growth must depend upon the capacity for self-improvement which co-operators exhibit. The movement, as a whole, is a new one in India ; but co-operative capital already runs into crores of rupees and progress has not only been rapid but has been pronounced to be sound by competent judges. Co-operation, in conclusion, is a science which deserves careful study of all who are interested in economic progress. It is a modern weapon which is, at present, in world-wide use. It has been adopted by countries which compete with India in the markets of the world ; and it is essential, if India is to keep her place in the race for commerce, that the importance of co-operative interests should not be underestimated.

AGRICULTURAL ASSOCIATIONS IN THE DECCAN.

BY

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The utility of Agricultural Associations if properly worked is no longer a subject of dispute. It has been over and over admitted on all sides, that there must exist an organisation, a body, which would serve as a link between the Government Agricultural Department and the cultivating classes, separated as these are by a wide gulf. It is not perhaps too much to say that without the aid of associations it is impossible for the work done by the Agricultural Department to have those wide-spread and beneficial results, which alone can justify its existence. The individual members of these associations being well-known men of their neighbourhood, men of experience in practical every day cultivation, the ordinary cultivator will listen more readily to these than to any other—expert or official. It is necessary however that individual members should work. And where the associations have got these right sort of men, their work has been and is going on well, and is being highly appreciated and followed by the cultivators.

In the Marathi speaking tracts of the Bombay Presidency there are altogether 29 Agricultural Associations. Out of these, 17 are in the 5 districts of the Central Division *viz.*, Poona, Satara, Sholapur, Nasik and Ahmednagar.

I had this year the opportunity as organiser of the Deccan Agricultural Association of visiting these associations situated in these five districts. It will be of interest to know their activities, and the general agricultural improvement these are calculated to effect, and the benefits resulting therefrom to the agricultural public.

In all these 5 districts the Ahmednagar District tops the list in point of the number of Taluka Agricultural Associations it has. This is due to the spirit of organisation that existed in some of the gentlemen who were instrumental in starting that pioneer Agricultural Association in the Deccan, I mean the Sangamner Agricultural Association. This was the first association in the District and the rest followed its example. This is also due to the agricultural shows which used to be held in this district almost every year, both at Ahmednagar and in the Talukas by rotation. These shows created a good deal of awakening in agricultural matters, and the people thus came to know the utility and importance of agricultural associations. In some of the Talukas committees of intelligent, and well-to-do cultivators and land-holders were formed to represent their Taluka at the District shows, and to give their own experiences of any new crop tried, the advantages from any field improvements effected *e g.* of Tals put up or the use of jumperbar for deepening wells. These organisations afterwards developed into agricultural associations. In others these were formed through the zeal and interest in agricultural matters on the part of local men.

At some places these associations were started at the instance of the central association, which created a good deal of interest in agricultural matters by meetings and other ways among the local men. In certain other places besides the objects of the improvement of agriculture, the organisation was formed for the co-operative sale of farm produce.

In the Satara District, in addition to the regularly formed Agricultural Associations, which are in two Talukas only, in rest of them the District Revenue authorities have *nominated* certain intelligent cultivators from each Taluka and they are often brought together for giving information on agricultural matters, and to this organisation the name "Agricultural Associations" has been given.

From the foregoing it will be seen that under whatever circumstances, these associations might have been started, their main object consists in the improvement of agriculture. The work of these associations until recently was limited to obtaining good seed for distribution amongst its members from the Agricultural Department or through it or the organising of an Agricultural Show in the Taluka.

Before dilating upon the practical work these associations are doing it will not be out of place to give a few words about The Deccan Agricultural Association, its relation to these smaller associations, the help it is rendering to these in maintaining their activities and the work it is accomplishing in spreading the knowledge of improved methods to the doors of the cultivators.

This Deccan Agricultural Association or the Central Body at Poona with its representative membership, and the strong co-operation of the experts and officials of the Agricultural Department forms a very influential and useful body in the cause of agricultural improvement. It disseminates agricultural knowledge, through papers read at its quarterly meetings, by means of its rural meetings held at places away from Poona and by its close touch with the local associations. It publishes an illustrated magazine—*The shetki and shethari*, which goes a long way in furnishing a long felt want, of an agricultural publication of its kind in Marathi, quite fitted to be a friend and companion of every cultivator who can read and write. Furnished with such useful material The Deccan Agricultural Association forms the Central Body for the benefit of the general agricultural public and a stimulating agency for the smaller associations.

Work done by the smaller associations —A number of subjects which have been proved to be useful by the Agricultural Department, and which can be safely recommended to the cultivators, and are suitable to the particular locality where the Agricultural Association exists are brought before the Agricul-

tural Associations The utility of these and the benefits that will be derived from them are then discussed in a meeting of the Association, and the cultivators, gathered after carefully considering if these new methods are profitable to them, undertake to carry out these on their own farms. Some of the subjects suggested are such as can be followed by any ordinary cultivator, without any cost to him and which are within his easy reach. Some which require initial expenditure are taken up by him after having been followed by his more well-to-do and substantial neighbours. Thus at each of the Associations one or more of the individual members follow one or the other of the improvements suggested. These serve as demonstrations to these cultivators of his neighbourhoods who are more sceptical to take to these of their own accord, without seeing them actually done or practised, and proved of decided advantage.

Some of the very useful and simple improvements are . (1) The proper preservation of cattle manure, (2) The selection of seed, (3) The use of copper sulphate against smut, (4) The cultivation of early maturing and profitable foreign varieties of groundnuts, (5) Cultivation of good yielding varieties of cotton and wheat, (6) Green manuring with San (Tag) for paddy

The proper preservation of cattle manure and especially urine, which though manurally highly useful is entirely lost sight of in some places. It is not uncommon to find cattle dung carelessly heaped on the ground. In this condition the dung gets dried and loses most of its manural value. In this connection the storing of dung in a pit and frequently keeping it wet by allowing waste water to drain into it, and the absorption of urine in dry earth by spreading the same on the byre floor and thus preserving the most valuable manural ingredient, can be followed without any extra cost. Both these are very simple methods and do not require any great outlay in money but what is required is more work on the part of the cultivators.

Another simple thing within the means of every cultivator and to which no proper attention is given in some places is the

selection of seed while the crop is standing in the field. The importance of seed-selection cannot be overrated. There have come out good results from the selected seed as compared with the unselected seed. There is a possibility of developing particular strains of seed such as early ripening, draught resistant and so on, by following the principle of seed selection every year. In these days of scarcity of rainfall we went early maturing and draught resistant varieties. During my recent tour in the Ahmednagar District, the importance of seed selection with these objects in view was demonstrated on the standing Bajri crop, and some of the intelligent cultivators in the Sangamner Taluka have promised to follow the same. This thing like the above does not require any cost, but labour and the desire to do things on the part of the cultivator are the only essentials.

The third thing is the use of copper sulphate as a preventive against smut (Kam or Kajali). In some places smut does such an amount of damage that a cultivator loses sometimes $\frac{1}{4}$ th of his crop. By spending one anna per acre on copper sulphate for seed-steeping the loss resulting from the disease can be totally prevented.

By the cultivation of the early maturing varieties of foreign groundnuts, and good yielding varieties of cotton and wheat, instead of the usual varieties of these crops which the cultivator grows, his income per acre is materially increased.

Other useful subjects and improvements, but which require some investment on the part of the cultivator are—(1) The use of the iron plough, (2) The use of iron sugarcane crushing mill, (3) The use of Poona Furnace for preparing gul, (4) The use of artificial manures as top dressing for sugarcane.

The iron plough costs Rs. 39. The utility of this implement has been now proved beyond doubt. The difficulty of its repairs, and the replacing of parts is no more now a difficult thing. These ploughs are also being manufactured here by Messrs. Kirloskar Brothers in their foundry at Kundal Road.

Station (S. M. Railway). In short all the things mentioned above can be followed by any cultivator and it has been found that even with the little initial cost, it always pays him in the end to do so

Besides the knowledge of the improved methods these associations are given information on co-operation in buying and selling, the vernacular agricultural schools, where agricultural education is given to the cultivator's sons. In this way the smaller associations are stimulated to work and some of these are doing very good work. It won't be out of place to give an idea of the chief lines of work undertaken by some of the associations.

In the Satara District the Islampur Association demonstrated the use of Poona Furnace for making gul, which has proved to be more profitable than the local one. It has this year applied Ammonium sulphate as top-dressing for sugarcane in one of the cultivator's field to show its effect side by side with the ordinary treated plot, for demonstrating the use of top-dressing for sugarcane. It has engaged a man who goes round and shows the steeping of jowar, and the working of the iron plough. Besides this its individual members carry out one or more of the improvements mentioned above.

The Satara District Agricultural Association is going to start during the Kharif harvest season 2 seed stores for supplying pure seed of the staple crop to the cultivators, while the individual members are following the improvements suitable to them.

The Sangamner Association in the Ahmednagar District is popularising Iron-mots, iron-ploughs, foreign varieties of groundnuts. Its individual members have taken to the use of top-dressing for sugarcane, the cultivation of foreign groundnuts, selection of seed, the levelling and bunding of fields to prevent washing and so on.

The Jamkhed Taluka Association has maintained two grain-stores.

The Barsi Agricultural Association in the Sholapur District has maintained a small demonstration plot for demonstrating the methods of dry farming, which latter is the chief kind of farming in the District to which this Taluka Association belongs.

The Sholapur Agricultural Association has purchased some iron ploughs and is popularising them by their free use to the cultivators

The growing of profitable new crops, and the use of iron plough, and its introduction among the cultivators has been undertaken by almost all the associations.

A few individual members from each of the associations, have undertaken one or more of the improvements mentioned above, which serve as so many demonstrations of improved methods to the neighbouring cultivators.

Some of the associations are only of very recent growth and consequently have not been able to collect sufficient funds, to carry on certain demonstrations independently like the Islampur or Sangamner Associations.

From the above it will be seen that in most cases the efforts of the associations, and their individual members are joined together to push on the agricultural improvements amongst the cultivating classes. Where the associations have no sufficient funds to hold such public demonstrations, the work of the individual members with slight help from the association in obtaining good seed for them is also doing a good deal in introducing new things.

On the whole it seems that cultivators are much benefited by such local institutions owing to the general awakening of interest in agricultural matters, and the idea so long held by them that nothing new is possible in agriculture is gradually passing away from their minds, and their views are getting more liberal to adopt new things.

The above has been observed even in small villages.

For the proper working of an association three things are essential—(1) right sort of men, (2) funds, (3) desire to work.

As regards the first point, well-to-do men, who have got lands and who work them themselves are required, such men can carry on on their own fields the improvements advocated to them. These when actually seen by the others are taken up by them.

Secondly, unless the association has some money its work will not go on properly. As, sometimes before a certain thing (which is intended to be followed by its members) is actually demonstrated and its utility explained, it will not be taken up even by a well-to-do cultivator. To do this therefore, as well as to purchase an implement of proved value for its introduction funds are required.

Thirdly, desire on the part of the members to do something individually apart from the demonstrations by the Associations as a body, is necessary. Unless these three things exist very little progress will be done. And wherever the work of the association is going on satisfactorily, it has been observed that these things are always to be found.

PRESERVATION OF NATIONAL ART, HANDICRAFT AND CHARACTER.

BY

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Kolhapur.

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I should offer my hearty thanks to the Conference for allowing me to express my humble views on the above subject

From time immemorial, art has been the expression of the human, nay, the divine intelligence for the happiness and pleasure of the humanity. As human mind is the fountain of diversity of thought, so it will never be content in having its skill expressed in a particular direction only. As India had gone to the climax of its civilisation in art and spiritual thought, it has still left, in the minds of the Indian people, the traces of the high appreciation of sculpture, art and painting.

Unfortunately, the old Indian art is dying out and the people are getting into modern modes of life and tastes. As this condition is not favourable to the development of indigenous art, it is deplorable and should be corrected as early as possible

Complete happiness is not gained merely by wealth and commerce ; on the contrary, the ambition of being a millionaire at the expense of the money and labour of others, is very dangerous. Several disastrous and unhappy examples of it have been observed in Europe and America.

There is a cry for industry in India, and several European and American manufacturers will soon install their machineries to carry out all the works and put the products in the market very cheap. I am not, in the least, against the growth and development of such industries in India. They are essentially required.

Surely, a steel machine can turn out in a short time, a large quantity of material for sale and satisfy the needs of merchants. But, will it develop intelligence and relieve the wants of the labouring classes? No. The repeated strikes of the labourers in Europe and America definitely point to the fact that machine industry does not remove the wants of the poorer classes. Comparatively, India being a poorer country its agricultural class will suffer heavily if the machine-industry be introduced in every direction.

A common excuse is always urged that the products of handicraft prove to be dearer as compared with those produced by machinery. But this is purely imaginary. If the handicraft be encouraged on a large scale and if the products be turned out of various patterns and colours expressive of the highest human intelligence, they will be sold out earlier; because, people have a natural fancy for diversity. A machine cannot at once stamp various patterns at will; it will take some months for a person to design a new pattern and to import it to India, while a person can turn out hundreds of patterns by handicraft meanwhile.

Madam A. L. Pogosky, a Russian lady, has proved the truth of this in a town, 'Zemstvo' by encouraging cottage industries of vegetable dyes, paintings, weaving, embroidery, cookery, etc. A huge literature of handicraft and its success can be received from her on application. I was fortunate enough to see her work in England last year and was greatly amazed at her enterprise and success.

The secret of the success of handicraft is the harmonious co-operation of the wealthy people and the workers. People have no faith in the success of it; but, if they were to put their full confidence and energy in it they will surely succeed. Even, with all the refined skill in machinery, we cannot get yet linen equal to that of Dacca prepared by hand work in ancient time. It is pity to lose such a handicraft!! Again, an artisan working with his hands has an opportunity to express his intelligence in various ways; in embroidery, sculpture, paintings, etc. Will

it be beneficial to the humanity and to any particular country to neglect its handicrafts ? Can a person develop his intuition, by moving the hands of the wheels of a machine for ever ?

‘Certainly not. ‘Therefore, if the ‘faculty of’ intelligence, reason, intuition,’ etc., of the Indian labourers is to be cultivated handicrafts should be fully encouraged. It is not a new thing to them. Millions of people in India have been earning their livelihood thereby for generations and they should be fully encouraged. Thus, instead of the cry for industry, there should be a cry to help the workers and encourage the handicraft.

‘The virtues of honesty, contentment, altruism, etc., are also necessary to be developed in a person to get full worldly happiness. As these virtues can be gained only through the ‘practice of devotion, religious education becomes necessary for the prosperity of commerce. Looking to the growth of insanity and suicides amongst the merchants of the Western countries, it can be safely said that they are due to lack of interest in religion and to the excess of materialism and selfishness. Also looking to the failures of a number of Banks, insurance companies and industries in India, owing to dishonest and fraudulent practices of company promoters and showed by Indian merchants one can say without hesitation that the Indians have lost to some extent their traditional reputation for integrity. If India is going to have the rapid development of handicraft and mechanical industries, she should be cautious of the above drawbacks and strengthen her traditional spiritual character to make commerce and industry a success.

India being a land of diversity of creeds and colour it is a difficult problem as to which religious system should be introduced into the schools ; but, looking to the sublime philosophy and ethics of the *Vedānta* which are common to all

religions in the world it can be safely introduced in Indian schools for the benefit of the country.

Shri Shankaracharya of the Karvir Peetha has formulated a scheme for introducing it in the masses, in its simplest and intelligible form. So any person who is desirous to get full information on the subject can obtain it from the Sarvadhikari of the Kolhapur Matha.

In conclusion, I would urge that, along with the growth of mechanical industry in India, there should be also full development of the handicraft and ancient art; and also a firm establishment of the ancient Vedic religion. I hope, these suggestions will meet with the approval of this learned congregation.

THE INDUSTRIAL EXHIBITION AND SALE OF WORK OF THE SALVA- TION ARMY IN BOMBAY.

A PLEA FOR COTTAGE INDUSTRIES

BY

TRIMBAK RAMCHANDRA KOTVAL Esq., B A, LL. B.,

Subordinate Judge, Poona.



The report of the opening ceremony by the Hon'ble Sir Richard Lamb has appeared in the *Times of India* on the 4th October 1912. The principal objects of interest were the exhibits of the silk and weaving industries.

2. Persons from the criminal tribes could be seen on the two days of the Exhibition, going through all the processes of making silk in all its stages. The first was tending the silkworms fed on the Mulberry leaves, and tending the worms fed on the castor plants. Some of these worms were making cocoons. The second stage was the reeling of the Mulberry silk on the Zanana Reeling Machine, costing Rs 30 or on a frame containing several of these, in a line, and turned by the handpower of a boy, when several boys sitting in a row each one could reel from his basin. The cocoons used were of the Univoltine breed reared from the seed from France. The machine can be had from the Manager of the Sir Louis Dane Weaving School. The cocoons were put in tins of hot water and placed over a stove and left to boil, to remove the gummy substance. The water was thrown away and new boiling water was taken in an enamel pot and in which were placed enough cocoons, soaked in the tin of the boiling water. A boy then with a bundle of grass kneaded the cocoons and removed the floss on them with his hand, which is called waste silk, and which is exported to Europe and there spun into thread or mixed with Eri-Silk and waste of Tussar Silk.

After this each boy caught about 6 threads from 6 cocoons and put them through a needle hole and guided them on so as to be reeled and wound up by the Zanana Reeling Machine. The cocoons could be seen dancing in the basin. When a cocoon was all unwound the boy supplied a fresh one. Several other processes of preparing the thread for wharf and whoof were being gone through and lastly one could see a native Christian boy weaving a thread into a fabric, on a loom, a patent of the Salvation Army Officer.

3. For the information of the visitors leaflets and pamphlets were distributed giving an idea of the exhibits and the industries represented.

(1) An illustrated paper on the Silk-Worm rearing at the Tata Farm at Bangalore was distributed, reprinted from the *Illustrated Times Weekly* of 30th August 1911. This shows that the Tata Farm was taken by the Salvation Army in their charge in 1910. The Mysore Government continued their annual subsidy of Rs. 3,000. Any one desiring to read an account of the Tata Sericulture Farm at Bangalore and all about sericulture in a nutshell cannot do better than read an article in the *Agricultural Journal of India*, Vol. IV, Part I, 1909, by J. Molison, M. R. A. C., Inspector-General of Agriculture in India. He says "The Farm was started in 1898 to help native reares, to control such diseases as affect silk-worms in India, and generally to give technical instructions in growing suitable kinds of Mulberries, in rearing silk-worm, in reeling and preparing it for market. *The little Farm has answered these purposes admirably.*" A month's course was thought enough.

(11) In the pamphlet "What the Salvation Army is doing in India and Ceylon" in the chapter on Cottage Industries the principal exhibits of the Exhibition will be found referred to. About silk it says "We have concentrated our attention especially on two varieties of the silk-worm, the ordinary Mulberry-Silk-worm and the other the Eri-variety which feeds on the castor plant; while the work is in its initial stages, we have

already met with considerable success. There are already 5 Silk-Farms. Great interest has been aroused in the question and it seems only to be a question of time establishing a great movement along the above lines:

(iii) Another important pamphlet distributed was "The report on experiments by the Salvation Army with French, Italian, Mysore and Eri-Silk, Worms 1911-12". Any one interested in the future of the silk industry cannot neglect or ignore this report. It is hopeful in tone, critical of the past work and the methods of the past workers in the field, a faithful record of what is being done, and full of suggestions for future work. Acclimatisation of the Polyvoltine variety is recommended for the plains and the tropical portions in India, as is being done in Mysore and Bangalore, though the Univoltine variety has been very successfully adopted in Cashmir at great cost, with seed from France.

(iv) A chart illustrating the life history of the silk-worm with notes of explanation was hung by the side of the table showing various samples of the silk thread of the Muga, Tassar, Eri and Mulberry worm reeled or spun in India and in Europe. Good samples of silk produced and reeled at Indore under instructions of the Salvation Army were kept on the table.

4. Mr Mukerji has investigated the question and reported on it for the Baroda State.

5. Eri-Silk is carded in Europe. It is spun in the Fyul-poor Settlement of the Salvation Army. They do not use the Pusa Machine but prefer an English Spinning Wheel. Imitations of this made by the Salvation Army can be purchased for Rs. 25 called "The Sir Louis Dane Spinning Wheel" from the Manager, Sir Louis Dane Weaving School, Ludhiana, Punjab. A boy can turn 3 to 5 tolas on it in a day. Ready thread can be had at Rs. 4-8-0 to Rs. 6-0-0 per lb. Any one who has seen Mukerji's Monograph on silk can see a variety of samples of cloth made of Eri and other silks. Mr. Commissioner Tucker

Booth can purchase any quantity of Eri-silk-cocoons for English Firms at one to two rupees per lb. This rate is much more liberal than the one of As. 8 offered by the Economic Botanist Ganesh Khind Gardens. This rate at any event creates some market for the Eri-Silk-Cocoons and the Depressed Class Mission can take advantage of it, as also the poor agriculturist who can get castor leaves or Tapioca leaves or of Pandhra Chafa. Tapioca was tried with success, in Ganesh Khind, after rearing the worms in the 1st or 2nd moulting on the castor leaves. I have once reared Eri-Silk-Worms on Chafa with good results at Talegaon Dhamdhera. I have also reared Deo Muga in my hall as a recreation on the leaves of the Banian tree at Sasvad. Live cocoons or seed for these can be had from the Agricultural Director, Assam, Shillong. They are fed on Laural leaves. Dyed samples of the silk were exhibited. About the Eri-Silk-Worm the pamphlet remarks "This is indigenous Polyvoltine variety of a hardy character. It is almost entirely immune from disease. The silk lacs brilliance and cannot be reeled. Hence it does not equal in value the mulberry-silk but it possesses extraordinary strength and durability and the fact that the worm feeds on the castor plant makes it easy to introduce it rapidly and universally throughout India. This worm seems certain to take the place of the Tussar."

6. I quote the following remarks showing the optimistic view about silk industry as a Pan-Indian one with great future possibilities. "If success is to be secured in obtaining for India a front rank position among the silk producing countries of the world, a bolder and more generous policy should be pursued instead of leaving to private initiative, the heavy initial and unremunerative expenditures which are absolutely essential for the ultimate success of the enterprise. It is probable that the Cashmir Government have spent more in one year on their industry than all the other Indian Local and State Governments put together have spent in a decade. And yet here at India's very gates is an industry which would increase her natural wealth and protect her immense village population from the con-

sequences of drought and famine perhaps as effectively as her vast irrigation work, and this at an infinitely smaller cost." The opinion of Mr. Commissioner F. Tucker Booth is entitled to weight as he has taken the advice of European experts before he formed his opinion and expressed it in the report.

About the Eri Silk he says "We were informed by the experts that there would be a limitless demand for the cocoons at remunerative rates. Unlike the Mulberry cocoons which must be packed loosely for transportation, the Eri-cocoon can be packed closely like cotton, an important consideration. Being spun and not reeled the facilities for spinning it in a marketable form are at present greater in Europe than in India and there seems good reasons for believing that the large export trade may in process of time spring up". As the silk industry occupied a prominent position in the Exhibition, and as my conversation with Mr. Commissioner Tucker Booth and his wife on the subject made a deep impression on me, I cannot help quoting the recommendations and suggestions he makes in chapter VII of the pamphlet. They are:—

(i) A definite policy should be decided upon and resolutely pursued.

(ii) In mountain regions where the winters are severe and in districts where only tree-mulberry is available, it will be best to concentrate attention for the present on the Univoltine French variety importing fresh seed from France annually on the system so successfully established by Sir Thomas Wardle in Cashmir.

But even here arrangements should be made for introducing bush-mulberry with a view to raising several crops. This can be done in two ways.—

(a) By keeping a portion of the imported seed in cold storage till the time comes for its release, as has been successfully done in Japan.

(b) By introducing healthy, disease free seed of Mysore or Bengal Polyvoltine variety.

(in) In tropical regions the Polyvoltine indigenous worms should be given the preference, provided that Bush-Mulberry is available, or that previous arrangements are made for its introduction.

Bush-Mulberry planted at the Allahabad Exhibition in November was ready for use in January and February, whereas trees are not available for 3 or 4 years.

In regard to Mulberries the introduction of Bush-Mulberry need not exclude that of trees. The latter need little care, can be grown with or alongside the ordinary crops, and require no expense for cultivation, while supplementing the bush supply, and yielding a crop of leaves at the most important season. The Bush-Mulberry will need protection from cattle and goats like ordinary field crops.

The training of an adequate and experienced staff of experts is one of the most urgent requisites. It is the recognition of this that has led us to establish the Silk-Farms above referred to and in these and similar institutions it should be possible to quickly give the rough and ready practical training which is required.

It is not so much highly trained experts with superior qualifications that are required, (though a certain portion of such will be needed as leaders) as the practical training and improvement of the men who are actually engaged in the business, and who will look to it for the support of their families. To encourage such, seeing that they are invariably family men, it will be necessary to offer scholarships or salaries while they are in training. Each district interested in the business should send some men to be thus trained, meeting the necessary expenses.

Where instruction is only desired in silk-worm rearing and in the cultivation of Mulberry a brief period of training will suffice. Where reeling is to be included a considerably longer period will be required.

Improvement of seed and protection from disease. In Bengal seed stations have been successfully established and microscopes distributed, and this at a very small outlay on the part of the Government. Silk-worm rearers quickly learn the great advantage of having disease free seed since they are able to raise a much larger percentage of their crop and consequently obtain a much higher price for it.

Next to Cashmir the Bengal Government is the most advanced and liberal in its support of the industry, expending, I believe, Rs. 40,000 annually in doing for the rearers what they are obviously quite unable to do for themselves.

The duty of Government in this matter is clearly recognised in all countries where silk-worm cultivation is successfully carried on.

It cannot be too clearly insisted upon and recognised that the silk-worm industry will never be either self-created or self-existent. The *laissez faire* policy cannot, and never has succeeded in this domain.

Private enterprise should be freely subsidised and encouraged, where it exists, and where it does not, it will be the obvious duty of the Local and Supreme Governments to inaugurate a definite policy and to follow it up with an adequate expenditure of money, which will be abundantly recouped at no distant date.

In China, which still leads the world, the industry was inaugurated by one of her early Empresses, who is to this day venerated as one of the chief benefactresses of her race.

In Japan, which closely follows her lead, no public expenditure is spared which can conduce to the improvement and

progress of what has now become one of her leading sources of national wealth and employment. As an illustration the Japanese have just bought a million cocoons from Manchuria, and are advertising for 1,500 Chinese experts, to start sericulture in Korea.

In Europe the cult was introduced in spite of climate and other obstacles by Kings and Emperors, with a lavish and yet none too lavish expenditure of money

If India is to take a leading place, as she easily may instead of following as at present at the tail end of the procession, a vigorous policy must be inaugurated and sustained, and an adequate expenditure cheerfully made, and private enterprise duly supported and encouraged.

7. I made the Eri-Silk thread spun on the Pusa Machine into fine socks; neckties, sashes and sundry other articles can I believe be made. The socks were made for me by the ladies of the Seva Sadan, Poona and my thanks are due to Mrs RAMABAI RANADE. The Knitting Machines should be used to utilise the thread. Fishing thread and thread for leather work can be made with great advantage. I suggest these as large quantities of cocoons enough for export cannot be collected except on co-operative lines. A visit to the exhibition and conversation with Mr. Commissioner Tucker Booth, and the perusal of the literature would make anyone hopeful about establishing Eri-Silk industry, as a cottage industry, it may not make one a merchant Prince but will add butter or salt or both to the bread earned from other sources. It is suited even for the very poor. I have done it on small and large scale. The Bombay Agricultural Department has issued a Bulletin on the subject. The Pusa Imperial Institute has also issued one No. 29 of 1912 and Mr. Lefroy's article in the Agricultural Journal of India Vol. IV, No. 1 on the subject is enough to teach the theory and practice of rearing Eri-Silk worms. The reader may refer to Agricultural Ledger No. 19 of 1894 and Notes on Industries of Assam by E. Stack, Esq. C. S.

8. The writer in the *Times* says the eyes of many people in Bombay must have been opened by the Exhibition to the value of the Army's Indian work. I have written the above so that the Army's good work, recommendations and suggestions may be known far and wide and may serve as a leaven for the far larger mass outside Bombay.

9. Mr. Commissioner Tucker Booth has strongly advocated State aid to start Silk-Industry for the betterment of the lower strata of society, for whose uplifting he was devoting his whole-hearted labours.

10. Mr. Commissioner fully realised that Government's support is a valuable asset. The Hon'ble Sir Richard Lamb says "The Salvation Army is doing admirable work in fostering what may be called HOME INDUSTRIES :—That is in showing the humble and the lowly how by labour, of which, they are capable, such as weaving, silk raising—they can raise themselves in the world, raise themselves, that is, to a condition as Mr Commissioner Tucker Booth well put it, of well being and reasonable earthly comfort, and at the same time attain a state of physical and moral fitness and the possession of the spirit of contentment". The Exhibition thus teaches the grand moral of giving ones best for the services of his country and striving for the social regeneration of the society, irrespective of the class, creed, caste or colour.

11. "To discover channels of remunerative labour is by no means easy and it is wonderful how imitative and lacking in initiative are for the most part of our Indian brethren. It is not only in the matter of home industries but also in the great concerns. To develop new openings for the small industries, those on which the lowly and humble can work and earn for themselves health, wealth and happiness as defined by Mr. Commissioner Tucker Booth, this also needs a large amount of preliminary spade work, investigation, thought, money and initiative. Some of this Government endeavour to supply, by making surveys of small industries but the efforts of Government need

to be supplemented by non-official labours. And we welcome the earnest and thorough-going labours of the Salvation Army in the field." This is an important remark by the Hon'ble Sir Richard Lamb which deserves to be considered.

12. I told Mr. Commissioner Tucker Booth what efforts were made in the past and were being made at present in the matter of sericulture in the Poona District and the Presidency and asked him if we in the Poona District could go in for sericulture as a cottage industry and his answer was in the affirmative. The conditions of success he said were enterprise, proper expert skill and sufficient funds and whole-hearted persevering efforts with a sufficiently trained class of workers. The Punjab Government has issued a Bulletin on sericulture.

13. Next to the silk industry, the weaving industry occupied a large space of the Town Hall. Special weaving looms of the Army's own pattern were kept working Turkish towels were being turned out in one loom. Improved processes of wharf and whoof were being shown. About weaving 2 booklets were given to a visitor (1) "The Sir Louis Dane Weaving School for the Punjab, Ludhiana" and (ii) "How to start a self-supporting weavery" These give information as to the work that is being done by the Army among weavers. Managers of Institutions, Schools, Hotels and Clubs are requested to help the Army by placing their orders with them. A similar remark was heard at the Fancy Bazar of the Poona Seva Sadana on behalf of that benevolent institution. I could hear it said that now that students, clerks and gentlemen wear socks and stockings, they can purchase such articles from institution like the Seva Sadana and help the cause of charity.

14. On one table one saw several plants of Eucalyptus and a pot of thornless Cactus There were exhibits of lace, drawn thread and needle work. Cassava (Tapioca) plant or its products were not kept in the Hall as it could not be arranged. The plans and models of the buildings of the Army also attracted one's attention. The British and Foreign Bible Society had a

stall there containing the Bible in 50 different languages. There was also a plentiful supply of literature, dealing with the work of the Salvation Army, for sale.

15. A leaflet on "How to plant Eucalyptus" was distributed. A Bulletin on the subject is published by the Pusa Institute No. 23 of 1911. Plants can be had from Sharanpur. Any one desiring to plant these malaria fighting trees should state the condition of the climate of his locality and the Superintendent, Government Gardens, Lahore can recommend to him the particular kind of tree suitable to the climate and locality. There are Eucalyptus trees in the Ganesh Khind Gardens.

16. Cuttings of thornless Cactus for planting, which serves as a food for cattle can be had from Salvation Army, Danapur Settlement Jail Road, Lahore. They are sold there. A Bulletin as to how to use it, is issued by the Bombay Agricultural Department. On this subject may usefully be read an article in the Indian Trade Journal, Vol. VIII, page 21, Cactus as a fodder crop.

17. Lace making is carried on at Satara just as sericulture was introduced at Ahmednagar in the Bombay Presidency. Instructions on lace making can be had from Satara. A Salvation Army lady would probably be deputed to any place to teach lace making if so desired.

18. Cassava (Tapioca) was not kept in the Exhibition but Mr. Commissioner Tucker Booth asked me to push it on to the notice of the public as a great fighter of famine and a drought resisting plant. I can recommend a perusal of the Government Resolution issued in 1908 by our Government, Agricultural Ledgers Nos. 4, 15 and 10 of 1897, 1900 and 1904 respectively; an article in the Agricultural Journal of India on the subject in 1908 and the American Farmer's Bulletin No. 167 of 1903. The Ledger of 1904 gives nearly all the information that one requires. I have planted trees at Dapur and they have grown well. Cuttings for planting were obtained from the Ganesh

'Khind' Gardens. They can also be had from Yisudasen Salvation Army Mavelikara, North Travancore. The roots furnish a good cheap food. Information on the subject in vernaculars, must be made available to the Public.

19. Poultry and Fruit Farm exhibits were not shown, however; Australian fruits and jams attracted attention on entrance to the Hall. The proceeds of sale profits were to go to the Funds of the Army. The Pusa Institute has issued two Bulletins Nos. 4 and 16 by A. Howard on the Fruit Experiments at Pusa. On canning vegetables, fruit and meat, at home American Farmer's Bulletin No. 309 gives practical hints to an Amateur. The Government of Eastern Bengal and Assam has issued a Bulletin No. 22 about the poultry industry in that province. The general remarks are useful to our province also.

20. There was a stall exhibiting the work of boys and girls in the schools of the Army. There were books on the educational systems of the present day. One book called the School Gardens attracted my special attention. An excellent article on this subject has appeared in the Agricultural Journal of India, Vol. V, Part III of 1910 by Mr. M. E. Couchman, Director of Agriculture, Madras. School Gardens in our Presidency are prominent by their absence. There were stalls for the sale of cotton and silk goods. A variety of fancy articles were exhibited the profits of sale of which were to go to the Army Funds. The Army finds market for the goods of the poor worker. To the above list of cottage industries may be added the artificial cultivation of Lac on Babul, Palas, Pimple, Vad, Tur, Bor, Shitaphal, and Kusumb. Bulletin No. 28 issued in 1912 by the Pusa Institute will serve as a good guide but I may as well tell the reader that the Babul tree can be inoculated with Bor mother-lac. I have done it successfully in the Poona District. My results have been published. The Bulletin on page 26 recommends Babul brood-lac for Babul trees. I have done this also with success. My paper on Lac Cultivation has been published by the Industrial Conference last year. In the Commercial Guide to the Forest Economic

Products of India, Lac is mentioned as an animal product of importance and pages 152 and 153 should be read by every one interested in the Lac industry. Very useful information about the Babul tree is given on pages 11, 12 of the above book. It will show what a vast field there is for increasing the Lac industry. Mr. Stebbing's Monograph on Lac insects, Sir George Watt's Lac and Lac Industries, Puransingh's note on the Manufacture of Lac and Chemistry of Lac, as also the several articles in the Trade Journal may usefully be read for an advanced study of the subject.

21. I would further add to the list the cultivation of the Shingada nut (*Trapa bispinosa*) and Annatto. For information on these one may refer to the Agricultural Journal of India, Vol. IV.

22 The persons in charge of the several stalls answered every question of the Visitor very cheerfully. Philanthropy, Charity and Education seemed to pervade the Hall and by natural process the aims of the Salvation Army got engraved on every heart, and they could be read thus :—

“The Salvation Army seeks to supply the missing link between want and wickedness and health, wealth and happiness. When we say health, we mean physical and moral and spiritual fitness. When we say wealth, we mean not a superfluity of riches, but the well-being and reasonable earthly comforts of its possessor ; and when we say happiness, we mean that spirit of contentment which flows from a mind at peace with God and man. We seek to be a Church to the Churchless, a home to the homeless and a refuge to the destitute and needy, regardless of class, caste, colour or creed. We strive to do for the poor what they cannot do for themselves and to protect them in the enjoyment of the fruits of their labour.”

23 The purpose of this paper will be served if the description given here of the Exhibition creates the effect in stimulating the active interest of all well wishers of India in what is being done by the Salvation Army in discovering channels for remunerative labour, by way of cottage industries for the social regeneration of the lower strata of the society to supplement the efforts of Government in that direction.
